A Clinical Lecture

ON

THE HANDS OF SURGEONS AND ASSISTANTS IN OPERATIONS.

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GENTLEMEN,—We have now arrived at an era in which we may claim to know a good deal about septic processes. We also know something at least about the life-history of most of the organisms upon which these processes depend, thanks to the patient labours of countless bacteriologists. It is also now pretty well understood how the various septic fungi may be destroyed by heat or chemical agents. But it is only comparatively recently that the several avenues by which the dreaded microbes gain access to the living tissues have been more or less clearly recognised and their relative dangers apportioned. And only more recently still has this knowledge led to fairly practical efforts—first, towards the reduction in their numbers in all localities where operations are undertaken, and, secondly, to their exclusion from the field of operation during the procedure itself. But notwithstanding this advance much remains to be done in the direction of utilising the knowledge gained.

The avenues of infection may be thus summarised. 1. Access to injured surfaces from within the patient's own body—e.g., lungs, alimentary and genito-urinary tract. 2. Access to injured surfaces from without. Under this last heading, with which we are alone concerned to-day, the possible sources of infection of a recent wound are: (*a*) the surrounding air and solids; (*b*) the object which has made the wound; (*c*) the instruments employed in treatment; (*d*) the ligatures, swabs, and dressings employed and the clothing of operator and assistant which may come in contact with the wound; (*e*) the patient's own skin and hair; and (*f*) the surgeon's and assistants' hands.

Now these half-dozen possible avenues of infection are not all of the same importance. This has been proved by a long series of original bacteriological investigations of the most laborious and ingenious nature; and if I were to give you the mere titles of only those of them which I have myself carefully studied the list might be so long as to discourage some of you. But the following conclusions may be drawn from all this work—theoretical, experimental, and practical.

(*a*) First, that the air of most rooms devoted to surgical operations, if the usual precautions as to general cleanliness are adopted and if they are not too crowded and if rapid currents of air are avoided, is not such a danger to open wounds as was formerly supposed in the days of the carbolic spray. This is not to say that the influence of the air as a germ carrier can be ignored as a *quantité négligeable* in all cases and under all conditions. It means simply that with ordinary commonsense precautions as to cleanliness, especially of the floor, and stillness of the air of a room we can operate in it without undue anxiety. That the absence of common sense is conspicuous in the arrangements with regard to some operating rooms is quite another matter. Rooms are dangerous to wounds in proportion to the numbers of people in them and to the activity of the movements of these persons to and fro. In a well-known clinical lecture room the following averages were established by a long series of bacteriological observations. When occupied by the usual audience the exposure for an hour of a four-inch Petri dish with sterilised agar showed on cultivation 155 colonies of organisms. On the other hand, when the same room was empty and the air at rest a similar exposure only showed 37. In contrast to this the aseptic operation theatre of the same institution in use and at rest only showed 60 and three colonies respectively after an hour's exposure.

(*b*) As to a wound made by an instrument or other object which is dirty, it need only be said that if seen early and it is possible the area involved should be cleanly *excised* and then the resulting wound treated as aseptic. If seen too late for this it should be thoroughly scrubbed and treated with antiseptics and left open.

(*c*) Speaking generally, the instruments employed in surgical operations can nearly all be rendered sterile by careful washing and boiling in soda solution. There are, however, some which are spoiled by boiling and the common antiseptics, and among these the most important are knives, scissors, and needles. Fortunately, washing with hot water and soap, followed by immersion for a quarter of an hour in methylated spirit, is quite adequate to render their plane surfaces aseptic. It may be said, then, that infection from an instrument can easily be prevented.

(*d*) The same may be said of the overalls, swabs, dressings, and bandages employed in most cases if saturated steam be employed. The last three, as you know, are in my own technique the same thing. For the sake of simplification of procedure my swabs are merely eight-inch lengths cut off the four-fold gauze rollers also to be used as bandages and dressings and all come out of the same sterilising drum in most cases. Simplification of procedure is to my mind one of the most important desiderata in aseptic surgery and is very sadly neglected at present. It eliminates many opportunities of confusion and of accidental contamination and saves much time and thought in preparation and manipulation as well as much expense.

On the subject of ligatures and sutures much might be said. The amount of investigation as to the best material to employ and the modes of its preparation is simply enormous. But it must not be forgotten that almost any material used for ligatures may be left in any tissue of the body, if *sterile*, without hurt if in small quantity. It becomes, then, a question what ligature can be best sterilised and what material is so strong that its thread can be very fine and yet very strong, so that the smallest foreign body is left in a wound. But that some materials are not easily sterilised is clear. As for my own work, after giving an extended trial to many substances—catgut, tendon, horse-hair, silkworm gut, pure twist silk, and linen thread—I have for years exclusively used the last for ligatures and sutures.

But beyond all this there is the possibility of restricting the use of ligatures in a great many operations almost to zero by the use of hæmostatic forceps. This gets over a great difficulty. But we know that the extent to which forceps may supersede ligatures is not realised by many operators, especially abroad. In my own work ligatures are but rarely used. I do not think, for instance, that in the last 50 amputations of the breast ten have been employed, perhaps not five. The forceps of Péan and Spencer Wells have been all that was necessary.

(*e*) If you wish to realise the abundance and variety of the flora of the human skin you have only to repeat for yourself one of the many careful and extended observations made years ago on this point by several investigators abroad as follows. After one or more rigorous hot baths, with plenty of soap, put on a vest previously sterilised by steam. But before doing so stitch on various spots of its inner surface small, one centimetre, patches of some woven substance, say in the axillæ and groins, the abdomen, and the back. When this vest has been worn for the day separate these patches with sterile scissors and forceps and place each in a tube of sterile agar. After shaking and stirring them up in the fluid pour the latter into Petri dishes and place these in an incubator. After 48 hours an inspection of the results will convince you of the omnipresence of septic organisms even on a clean skin where it is not exposed to the air and will give you an idea of their relative abundance on the various parts of the body over which the little patches have been worn. If these results are obtained from a well-washed skin a surgeon may well be uneasy in the case of the average patient. And if this is true, how much more so must it be of the skin of the head, hands, and feet which are constantly exposed. If any further proof is necessary read the reports of some bacteriological tests of the number of organisms found in a cubic centimetre of water taken from the Seine in Paris first above and then below the laundry stations on its shores. The difference runs into millions. After this you will need no proof that the whole skin of a patient to be operated on requires the most careful cleansing not once but many times before an operation is undertaken. (Many other proofs might be given.) And why many times? Simply because though one washing with or without germicides may render the surface of the skin *relatively* pure it does not reach the hair, sweat, and sebaceous follicles which are constantly the hosts of countless microbes and these latter only come to the surface in the course of natural secretion. Individuals vary,

of course, as to the crops of micro-organisms they grow in their skin as well as on it and in certain callings we may expect more than others. But for surgical purposes we must assume that *every* skin claims the very closest attention before operation, no matter what class of the community the patient belongs to. And also we must remember that different parts of the body surface vary as to the abundance of their septic flora. This is seen in the experiment alluded to above.

As a general statement, wherever follicles abound in the skin, whether hair, sebaceous, or sweat, there the usual micro-organisms abound and are particularly hard to dislodge. For this reason my own reliance for the cleansing of the skin is placed in the first place upon *repeated* hot baths of the whole body wherever permissible, accompanied by vigorous scrubbing with soft soap and brush. After each bath the area to be uncovered during operation is wrapped up in some sterilised fabric after a couple of hours of soaking in 1 in 30 carbolic lotion. The increased activity of the glands of the skin induced by the baths and wraps brings the secretions to the surface and with them the parasitic organisms. The carbolic solution tends to destroy these and produces besides a certain amount of exfoliation of the superficial epidermic scales which are, as a rule, more or less infected. When this process has been repeated, if possible for some days, the skin is relatively clean. It is finally washed carefully over before operation with spirit. In those cases in which an operation has to be done soon after the patient is first seen the skin is washed with turpentine or ether thoroughly, then soaped, shaved, and scoured over and over again with hard brush and hot water and soft soap, and wrapped in the carbolic towel if possible for two hours before operation, or as near that as time permits. But in both cases, regarding the skin as still possibly impure, I have for many years adopted the practice of covering the whole of the patient's body just before operation with a sterilised sheet of double gauze or cloth through which a hole is cut only large enough to permit of the operation being done through it, while the hands of the operator and assistants are by it prevented from coming in contact with the patient's skin during the operation. This gauze extends from the patient's face to the feet and covers all his clothing and the operating table. It is cut from one of our rollers. In former days we were taught to protect the patient from the chilling effects of the spray by the use of mackintoshes, and to protect both the surgeon's hands, and therefore the patient, from the mackintoshes by covering the latter with towels wet in carbolic solution. The sprays having now gone the sooner the mackintoshes and wet towels go the better, as they cost much labour and time to clean. I have not used these for many years.

(*f*) We now come to the subject which I wish to emphasise particularly to-day—viz., the surgeon's and assistants' hands. And if this is treated somewhat in detail it is because it is admittedly one of the weakest points in our aseptic procedure and everything is not commonly done to minimise risk from the hands that might easily be done as a routine.

The question of the cleansing of the hands in the first instance is of course the most important of all. It is not too much to say that this fact is now fully established and that an enormous amount of laborious bacteriological work has been done to find out the best methods. And the number of valuable essays which have been written on the subject is very large. Having read all the most important and tried many methods I may say that I have more confidence in the results of Ahlfeld's and Fürbringer's experiments (now many years old) of sterilising the hands with very hot *running* water and pure soap and brush, followed by spirit, than in any others. This has to be employed in no perfunctory manner but over and over again for many minutes at a time. The evidence is strong that by this method of disinfection the percentage of organisms clinging to the hands is as small as, or smaller than, by any other known procedure. Nevertheless, we will do well to admit at once that after any method of cleansing a perfectly sterile hand is an exception. Moreover, it must be remembered that it has been proved over and over again bacteriologically that the surface of a hand cleansed to apparent sterility becomes after a short time re-infected from its own skin follicles in the process of sweating, &c., even if no organisms reach it from without. This all suggests several alternatives. First, that the hands should be washed frequently during all operations of any duration and this should be considered indispensable. Their own impurities which transude to the surface and others accidentally reaching them from the air or casual contact with the patient's skin, even in the case of a surgical incision into healthy tissues, are thus removed by washing over and over again during the operation.

The second alternative is the wearing of impermeable rubber gloves which can be easily sterilised and will retain within them any impurities exuding from the hands until the end of the operation. Having been one of the first to introduce rubber gloves from abroad and for a long time to use them in operating I am not speaking without experience when I say that I distrust them during operation except in very exceptional cases and value them when it is a question of keeping the hands clean *for* operation. The distrust arises from the recognised fact that they are very easily pricked, cut, or torn without the fact being recognised, and if so the fluid derived from the perspiration of the hand, which has been proved to contain numerous bacteria, escapes into the wound more or less concentrated. They are of value, however, when it is a question of dealing with foul parts before operating on clean tissues. They can be used to protect the hands from septic material and then removed. It is for this reason that they are dispensed with in most of my own operations unless I or my assistant happens to have an abrasion on the hand which is not quite healthy. Otherwise they are only used to keep the hands clean for future use. This is the reason why my house surgeons have been directed for years past to wear rubber gloves in the wards and casualty department when manipulating dirty cases. By this rule I believe we secure a higher standard of purity in our hands when it is necessary to employ them to take part in serious operations. That is to say, they are not being constantly re-infected with septic organisms. But there is a further rule which I have carried through for many years as rigidly as possible for myself, my house surgeons, and dressers and which contributes perhaps as much as anything to surgically clean hands. By this rule I train myself and my subordinates so far as possible never to touch a foul dressing with the naked hand. To avoid this there is always a trayful of sterilised forceps and other instruments at hand for every dressing and thus we save the fingers from contamination with pus and other secretions. This, of course, does not obviate the necessity of careful washing of the hands after each dressing, but under this system *there is much less* dangerous material to be washed away. And remember that a hand once fairly infected with bacteria is extremely difficult to disinfect again, even with numerous washings and germicides. If any of you doubt this statement read the experimental work of Heile on this point. This routine is really far less cumbrous than it sounds and with the loyal coöperation of house surgeons, sisters, and dressers runs smoothly enough as far as we are concerned.

Then there is a third alternative—namely, that the hands should come as little as possible in contact with fresh cut surfaces. This is a point which has for a long time appeared to me to receive far less consideration than it deserves. If it be conceded generally, as is the case, that under any or all the methods devised for cleansing the hands a certain suspicion must always remain as to their sterility it ought to follow that manipulation of fresh-cut surfaces with the naked hand should be avoided wherever possible. And certainly the extent to which it can be dispensed with is not generally realised. With a little practice the routine of employment of instruments in place of fingers during an operation can be established and in the end becomes a habit. Very extensive operations lasting a considerable time may be done from beginning to the end without the living tissues being touched by anything but sterile gauze or steel instruments. And in cases of foul wounds the advantage of keeping the hands from contact with infective materials is obvious. To do without using the tactile impressions of the fingers is not always possible in the middle of an operation but their use can, and ought to be, limited for cut surfaces. And even when we must palpate or grasp the deeper part of a wound or abdominal contents we can often do it through a double layer of gauze and so prevent immediate contact with the finger. Within the abdomen this is not always possible, but even here contact with the hands can be guarded against to a much larger extent than is commonly supposed. The old tradition that tissues ought not to be held in forceps for fear of injury to their vitality ought to be exploded.

We all know now that clamps may be left, for instance, on the intestine or stomach for half an hour at a time without any risk, unless badly constructed.

But one can best illustrate the procedure by taking a particular case. Let it be that of an extensive excision of the breast. I will briefly describe to you the technique which I have employed for many years past in removing this organ. It is quite possible that the objects of several of the details have been misinterpreted by some bystanders seeing them for the first time. Of course, the first aim nowadays in removing a cancerous breast is to take it away completely and with it all the various structures about it in which the lymphatic tracts lie. On this subject in its various bearings we often confer in the wards and trace the course of the various lymphatic channels leading from the organ. Next in importance to this is the planning our technique so that even in the most wide-reaching operations the asepsis is so complete that primary union is the result. In the first place, then, the patient has several hot baths with soft soap and plenty of scrubbing. Then the axilla is shaved and the ritual mentioned above is continued until the operation. But in view of the fact that the skin may not yet be blameless and that the hands of assistants and surgeon may come in contact with it inadvertently, I have for years been in the habit of throwing over the patient and operating table a sterile sheet in which a hole is cut just large enough for the operation. Such a sheet lies closer to the patient's skin and is less easily disturbed than a number of towels pinned together. Except over the area of operation neither the patient's skin, clothes, or the table can be touched, and as the sheet is sterile no harm comes from contact with hand, swab, or instruments.

To be steadied for the first incision the slippery breast is grasped by the fingers with a swab of gauze interposed. And for the wide dissection of the skin away from the mammary fat before the latter with the breast is dissected off the thoracic wall, the skin is best held by the operator in our usual gauze swabs and retracted by the assistant with hooks wherever necessary. In no case is it necessary for the hands to touch the raw surfaces. And further on when the breast and fat are being separated with or without the pectoral muscle from the thoracic wall it is easier to hold if wrapped in a large sheet of gauze which saves the hands from coming in contact with the part of its skin which is being removed and prevents also the latter from touching the raw surface. Finally, as the breast and its peri-mammary fat hang free except for their attachments towards the axilla the rest of the clearing round the vessels and nerves can be done by blunt dissection with the closed ends of a broad-bladed curved scissors aided here and there by a snip with the same while the left hand grasps the breast enveloped in gauze.

But all the time this large wound if left open to the air would be liable to be contaminated by dust or the breath of those closely occupied around it. This is guarded against in this way. As fast as the surgeon makes the wound and the bleeding vessels are clamped the assistant is told to cover it up with gauze and to press upon the latter firmly. This has the double effect of stopping oozing and protecting the surface from infection. For the breath of the surgeon and assistants is certainly a danger. We know that the mouth of even cleanly persons is the seat of an abundant flora. And that these escape in the breath has been proved conclusively.

When the removal of the whole mass has been completed by the final clearance of the axilla to its highest boundary, the gauze is removed and a rapid survey of the whole wound takes place, forceps being removed or fresh bleeding points being clamped if necessary. Then the dried wound is filled again with gauze, one continuous piece from a six-yard roll being used by choice to avoid the risk of any disconnected pieces being overlooked. Then while the assistant presses the flaps together over the gauze the stitches are introduced from one end of the wound to the other. When all are in place the long strip of gauze is drawn out by degrees, bringing away any traces of blood or clot, and while the assistant presses the flaps firmly down upon the thoracic wall the stitches are knotted, the ends are cut, and an aseptic gauze and cellulose packing is firmly bandaged over the whole area of operation without drainage.

This operation is merely taken as an illustration of a lengthy procedure which can be carried out from the beginning to the end without the fingers or anything which touches them being brought in contact with fresh-cut surfaces. This appears to me a most important matter so long as we are obliged to admit that the hand is almost impossible to sterilise and to keep sterile. But while we are able to sterilise knife, forceps, retractors, and scissors and to cover the wound as it is made with sterile gauze we can eliminate the chief risks of infection even of the most extensive wounds.

But there is another point. You notice that only one assistant is allowed to have any part in the operation. This is only to be consistent. For if two hands are to some extent a risk any greater number increase that risk. And it is easier for an operator to control the doings of one assistant during an operation than those of several. Moreover, that one assistant knowing that at any moment he may be called upon to help in the most complicated procedure day or night will endeavour day and night to keep his hands out of foul matters or wear gloves where he has perforce to deal with them. Again, he is enjoined to do as I have done myself, for years, before operating—namely, to wash his mouth carefully with an antiseptic, having seen to it that he has no carious teeth, no influenza cold, or other source of sepsis in his air passages. If either of those immediately concerned in an operation have any of these the mouth and nose are covered with a fourfold sterile gauze bandage tied behind the head. I began this form of "muzzle" in exceptional cases eight or ten years ago and now adopt it almost as a matter of routine except in trifling cases.

To illustrate the desirability of this measure I should like to relate to you briefly an experiment of the late Professor Mikulicz, which may not be familiar to some of you and the results of which I saw eight years ago. Being anxious to study the possibility of infection from the surgeon's breath while operating he proceeded as follows. Starting with the ascertained fact that no mouth is free of suspicion as to being septic but that the organisms commonly present in it are not easy to recognise in a moment in a culture and that the air of a room contains many common forms, he conceived the idea of inoculating the mouth with a potent pure culture of a bacillus easily cultivated and easily recognised and which was still so uncommon in rooms set apart for operation that it might be assumed that they would not be present accidentally in the air of the same. One of his assistants having therefore washed his mouth freely with a sterile salt solution in which an abundant culture of the bacillus prodigiosus (producing, as you know, a blood-red pigment) was mixed spoke for ten minutes quietly over four Petri dishes of sterilised agar-agar placed on a table at the same distance from the mouth as an operation wound would be. These dishes were then covered and placed in an incubator. The mouth in these experiments was in the first instance uncovered. The result was remarkable. After incubation the aggregate of colonies of bacillus prodigiosus, with its characteristic colour, on the four dishes was in one experiment 119, in a similar one 119, and in a third 581. The mouth and nose of the experimenter were then covered with a *single* layer of sterile gauze and he spoke over four fresh dishes under similar conditions. After incubation three colonies of bacillus prodigiosus were found on one set and 17 on another. The experimenter then covered his nose and mouth with a *double* layer of sterile gauze and repeated the operation over four fresh dishes for ten minutes, the result being that one set of dishes was found sterile after incubation and another set had only one colony. Control dishes open at the same time showed countless colonies. These experiments were repeated over

Abbreviated Table giving the Results of Experiments in the late Professor Mikulicz's Klinic in Breslau. (1898.)

Ten minutes' exposure of plate while quietly talking.	Badly applied.	Well applied.	Well applied.	Well applied.	Well applied.	Well applied.	Three or four coughs during the ten minutes' exposure.		Operator sneezed once during the ten minutes' exposure.	
Without gauze ...	119	119	581	362	679	233	265	223	Countless.	Countless.
With single layer of gauze	27	3	17	20	42	10	180	0	—	—
With double layer of gauze	24	0	1	0	0	1	0	0	506	325
	Total of colonies on four agar plates.									

and over again and gave in all cases practically the same results. But there was a remarkable exception. In one experiment with a double layer of gauze over the nose and mouth the operator sneezed and 506 and 325 colonies were found where the dishes had been practically sterile before. Having seen the result of these cultivations myself and examined the dishes I confess I was impressed with the number of organisms which could be breathed out of the mouth in talking and the simplicity of the means of arresting them which I have since practised.

Now if these easily recognisable bacilli can be distributed thus it is fair to assume that those numerous pathogenic organisms which we know flourish in almost every mouth can also be sown broadcast in the same way. The moral to be drawn from all this is: first, that operators and assistants should look to the cleanness of their mouths; secondly, that as little talking as possible should be indulged in in the neighbourhood of an open wound; and thirdly, that at least where there is a suspicion of an unusual infectivity of the operator's mouth or air passages, if not in every trifling operation, these should always be covered with some porous protector.

But when all is said and done the fact remains that when wounds are infected from without it is a question in most cases of a direct contagion with hands, instruments, or other bodies applied to it rather than through matters carried through the air. It is for this reason that stress has been laid upon the urgent need of using sterilisable instruments instead of the hands wherever possible. That this can be done has been proved in much of my own work and I should like to see the practice extended. To work aseptically means to a large extent a constant and serious consideration day and night how we may best prevent ourselves from becoming the carriers of infection. And if we are successful in this our paraphernalia and ritual become simple and the simpler the better, a chain being only as strong as its weakest link. If these remarks were not addressed to my own class who are constantly present in the operating theatres and wards it might be necessary to go more into detail. The aim here has been rather to point out the principles which underlie details with which you ought to be familiar.

INTERNAL SECRETION AND THE DUCTLESS GLANDS.[1]

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PART I.—INTRODUCTORY.

Secretion and internal secretion.—By the term "secretion," applied in its most general sense, is understood the separation out of materials from the animal body. This, the original conception of the process, has been long extended to include also the preliminary preparation or more or less complete elaboration of the materials which are supplied by the blood circulating through the organ. Johannes Müller[2] pointed out that the whole process of secretion consists of two phases, the production of certain materials, and the casting out of these materials upon a surface either in the interior or upon the exterior of the body. The first phase he called "secretion," the second "excretion." In some cases the material eliminated might be found in the blood stream and was simply separated by the tissues of the organ and passed out. This applied to the urea of the urine, which was looked upon by Müller as a pure case of "excretion." The distinction thus set up has, however, not been retained in a very strict manner. The term "excretion" is mostly applied at the present time in rather a vague kind of way to denote the process of elimination of waste products from the body. The idea of secretion has from the earliest period of physiology been associated with what are called "glandular" organs. There is no need in this place to describe a "gland" in any detail. Its essential is a surface provided with epithelial cells, usually of a columnar or cubical shape, and characterised by the presence of tiny granules of the substance to be secreted or its precursor. This surface may be a simple pouch or may be very complicated by the extension of the involuted portion and by the growth of side branches, as in the case of the compound racemose glands. In these glands the terminal portion of the tubes or "alveoli" are the secreting portions, while the tubes leading to the exterior are the "ducts."

The term gland was applied in the earlier days of anatomy to a very varied group of structures which resembled each other in certain general external characters.[3] Then it was discovered that some of these organs possessed a "duct" by means of which a "secretion" was poured out. Such a structure was, and is still, regarded as the most typical form of "gland." But others of these glands possessed no duct and were therefore called "ductless glands," or in Germany more usually "Blutgefässdrüsen." The hypothesis soon arose that in these cases the specific secretion is passed into the blood stream and the process is termed "internal secretion." The term "internal secretion" was, however, so far as I can ascertain, first used by Claude Bernard[4] who described the glycogenic function of the liver as the "sécrétion interne," while he referred to the preparation of the bile as the "sécrétion externe,"[5] and was subsequently extended by Brown-Séquard and by Schiff to apply to the process of secretion in the "ductless glands." In some cases the material secreted by the ductless glands is passed, not directly into the blood stream, but indirectly by way of the lymphatic vessels. This applies to the specific secretion of the thyroid gland.

The "ductless glands," according to the original conception, were the thyroids, the pituitary body, the suprarenal capsules, the spleen, the thymus gland, and the lymphatic glands. But soon it was discovered that some of these had not a glandular structure—i.e., they did not consist of epithelial "secreting" cells; some, for example, such as the spleen and the lymphatic glands, belonged to another category of organs.[6] On the other hand, some new organs, such as the carotid and coccygeal bodies and the parathyroids, have been added to the list. The thymus occupies a quite anomalous position. It is in its earlier stages an "epithelial" organ, and possibly has a secretory function, but later in the course of its development it becomes for the most part a mass of adenoid tissue. The structures usually included at the present time under the title of "ductless glands" are the thyroid gland, the parathyroid glands, the cortical suprarenal gland, the medullary suprarenal gland, the pituitary body, the carotid and coccygeal bodies, and possibly the thymus. Some authors would reduce this list by cutting out the medulla of the suprarenal capsule and the carotid gland on the ground that they consist not of epithelial secreting cells but of a special type of tissue—the chromaffin tissue.[7] It is believed that these "ductless glands" manufacture and pour, directly or indirectly, into the blood stream some substance or substances which are of service to the economy, either by supplying a need or by destroying other substances which are needless or positively harmful. This last function, that of

[1] Reprinted, with some alterations and additions, from the official reports of the Fifteenth International Congress of Medicine, Lisbon, April, 1906, Section III., Pathology.

[2] "The matters separated from the blood by the action of a secreting organ are: 1. Substances which existed previously in the blood and are merely eliminated from it; such are the urea, which is excreted by the kidneys, and the lactic acid and its salts, which are components both of the urine and of the cutaneous perspiration. These are called excretions, the process of their separation from the blood, excretion. 2. Substances which cannot be simply separated from the blood since they do not pre-exist in it, which, on the contrary, are newly produced from the proximate components of the blood by a chemical process; such are the bile, the semen, the milk, mucus, &c. These are called 'secretions.'" Elements of Physiology, Translation by W. Baly, London, 1838, vol. i., p. 429.

[3] "Die Classe der Drüsen ist eine derjenigen, welche eine Wissenschaft in ihrer ersten Jugend leichtsinnig schafft, und welche zu begrenzen und rechtfertigen ihr in Zeiten der Reife grosse Sorgen und Mühe kostet. Man hatte anfangs nur die äussere Form im Auge und nannte jedes weiche, rundliche, gefässreiche und daher röthliche oder rothe Organ eine Drüse, und das Gewebe solcher Organe drüsig." Henle. Sömmerings Bau des Menschlichen Körpers, Band vi., p. 889.

[4] Leçons de Physiologie Expérimentale, 1855, tome i., p. 96.

[5] Chez les animaux, la sécrétion glycogénique est une sécrétion interne, parce qu'elle se déverse directement dans le sang. J'ai considéré le foie, tel qu'il se présente chez les animaux vertébrés élevés, comme un organe sécréteur double. Il semble réunir, en effet, deux éléments sécrétoires distincts, et il représente deux sécrétions: l'une externe, qui coule dans l'intestin, la sécrétion biliaire; l'autre interne, qui se verse dans le sang, la sécrétion glycogénique. Claude Bernard, loc. cit.

[6] According to modern nomenclature, to the "haemolymph" series of organs. See Vincent and Harrison, Journal of Anatomy and Physiology, vol. xxxi., 1897, p. 176; Lewis, Internationale Monatsschrift für Anatomie und Physiologie, Band xx., 1902.

[7] Kohn: Archiv für Mikroskopische Anatomie, Band lxii., 1903.

"Entgiftung," is usually ascribed to the thyroid and parathyroid, and there is some little evidence that the same function may be performed by the cortical suprarenal gland. But nothing has been said so far to preclude our attributing to muscles, nerves, and indeed every tissue in the body an internally secreting function. It is obvious that in the broadest sense of the expression all tissues and organs of the body may be said to have an internal secretion, i.e., the blood which leaves by their veins contains different chemical substances from that which enters by their arteries. In many cases it may be reasonably assumed that the new substances are in some degree specific for the particular tissue. But the idea of internal secretion has in some instances been extended beyond the limits defined by the facts at our disposal. In some cases we may be guided to some extent by the structure of the organ or tissue in question. If it be composed of epithelial cells of a glandular character we may reasonably be prepared to attribute to it the function of internal secretion, even though the nature of the secretion be quite unknown. In other cases if some substance not commonly found in, or extractable from, the tissues of the body be manufactured in a tissue or organ we may strongly incline to the view that the said substance is an internal secretion, and this even if the tissue in question departs somewhat widely from the glandular type. As an example of such a tissue may be adduced the medullary suprarenal gland. Extracts of many tissues will, when injected into the blood-vessels of a living animal, cause a lowering of the blood pressure. This is markedly so, for example, in the case of the nervous tissues—but it would be rash to allege that to manufacture the depressor substance is one of the functions of the nervous system. On the other hand, from some organs such very exceptional substances can be extracted, and such very unusual physiological effects can be produced by their administration, that we are justified in interpreting these effects as an indication of the function of the organ, and in regarding the substances as the products of its "internal secretion." This, again, applies to the medullary suprarenal. But a typical gland having a duct and performing "external secretion" may possess in addition the function of "internal secretion." Thus the liver has, as pointed out by Claude Bernard and referred to above, besides the formation of the bile the glycogenic function. It has the still further duty to render innocuous the end products of proteid metabolism. One of these is ammonia; this is converted in the liver into urea, so that the distinctly poisonous ammonia is transformed in this organ into the comparatively harmless urea. This is an example of what may be called a "negative internal secretion."

The most usually quoted example, however, of a gland which has both an external and an internal secretion is the pancreas. A relation between diseases of the pancreas and diabetes had long been suspected,[8] but Minkowski and Mehring[9] first definitely showed that complete removal of the pancreas in the dog, cat, and pig is followed by diabetes having the usual symptoms of that disease in man. That this is caused by the absence of an internal secretion is proved by the facts that it does not occur if the gland be left *in situ* and the duct tied, nor does it occur if a portion of the pancreas be grafted in some situation remote from its normal position (e.g., underneath the skin or in the peritoneal cavity). How the internal secretion of the pancreas normally prevents glycosuria is not clear. We can only say that it exerts some influence upon the carbohydrate metabolism, either by favouring the formation of glycogen in the liver from the dextrose taken to it by the portal vein or by furthering the oxidation of dextrose in the tissues generally.[10]

The pancreas is usually considered to consist of two separate and distinct kinds of tissue, the secreting alveoli and the islets of Langerhans,[11] and it is supposed by many writers that it is to these latter and not to the glandular alveoli that one must attribute the internally secreting function which concerns the carbohydrate metabolism. It is also believed by some authors that the kidney has an internal secretion. Tigerstedt and Bergmann[12] state that a substance may be extracted from the kidneys of rabbits which when injected into the veins of a living animal causes a rise of blood pressure. They conclude, therefore, that a substance, for which they suggest the name "renin," is normally secreted by the kidney into the renal blood and that this substance causes a vaso-constriction. The rise of blood pressure is not very marked or very constant. Vincent and Sheen[13] found, however, distinct evidence of the existence of a pressor substance in the kidney. Tigerstedt and Bergmann state that the substance is destroyed by boiling, and it is certainly true here as with other tissues, with the exception of suprarenal medulla and pituitary infundibulum, that if the extract is boiled one is more likely to get a depressor effect from it. Vincent and Sheen found, in fact, that one frequently obtains pressor effects from the injection of unboiled animal extracts, while the usual effect of boiled extracts is depressor. But it must be remembered that if one simply makes an extract with cold normal saline solution one has to deal with the nucleo-proteids in addition to other substances. On the first injection of such a "proteid" extract one gets a fall of blood pressure. If a second injection be made immediately one frequently gets a rise instead of a fall.[14] It is probable that this explains, at any rate to some extent, the rise obtained by Tigerstedt and Bergmann and by Vincent and Sheen with "proteid" extracts of various tissues. It is, moreover, doubtful whether these physiological or rather pharmacological results have any very important bearing upon the question of the internal secretion of the different organs.[15]

But arguments based upon experimental work of a different character have been urged in favour of the view that the kidneys have an internal secretion. In 1869 Brown-Séquard[16] had expressed the opinion that the phenomena of uræmia were in part due to "l'existence de changements chimiques morbides du sang remplaçant la sécrétion interne normale." Later in 1892 Brown-Séquard and d'Arsonval[17] showed that "le rein a une sécrétion interne d'une grande utilité." They removed both kidneys from rabbits and guinea-pigs. Then they administered to some of these by subcutaneous injection diluted juice of kidney from a normal animal of the same species, while they left others untouched. They found that those animals which had received the injection survived one or two days longer than the others. The phenomena of uræmia were of slower development in those which survived the longer, owing to treatment with kidney extract. Meyer[18] found that injections of kidney extract, of normal blood, and of renal venous blood from a normal animal have the immediate effect of checking the Cheyne-Stokes respiration which is such a striking symptom of uræmia. Vitzou[19] found that in rabbits and dogs the injection subcutaneously and intravenously of defibrinated blood from the renal vein of a normal animal prolonged the life of a nephrectomised animal in a very striking manner. Thus in one rabbit the survival was 42½ hours longer than was the case with the control, which had like the first undergone double nephrectomy. Vitzou concludes that the kidney has an important internal secretion, the absence of which plays an important part in the causation of uræmia.

In some cases, too, there is considerable reason for ascribing an internal secreting function to an organ which is not, properly speaking, a gland at all. Thus there is evidence that the testis and the ovary perform internal secretion. Brown-Séquard[20] found that subcutaneous injections of extracts of testis exercised considerable influence upon the general health as well as the muscular power and mental activity. The experiments were performed upon himself when he was 72 years of age and he describes very

[8] Lancereaux, Bulletin de l'Académie, vol. xix., 1888, p. 588; Baumel, Montpellier Médical, Oct. 16th.

[9] Archiv für Experimentelle Pathologie und Pharmakologie, Leipzig, 1890, Band xxvi., S. 371; see also Minkowski, Ibid., 1893, Band xxxi., S. 85; Dominicis, Giornale Internazionale delle Scienze Mediche, Napoli, 1889.

[10] Schäfer: Text-book of Physiology, vol. i., p. 929, 1898.

[11] See, however, Dale, Proceedings of the Royal Society of London, vol. lxxiii., No. 489, Feb. 24th, 1904, and Philosophical Transactions.

[12] Skand: Archiv für Physiologie, 1898, Band viii., S. 223.

[13] Journal of Physiology, vol. xxix., No. 3, April 23rd, 1903.

[14] Vincent and Cramer, Journal of Physiology, vol. xxx., No. 2, 1903.

[15] In some cases the fact that extracts of an organ when injected into the blood-vessels of a living animal cause a lowering of the blood pressure has been somewhat hastily assumed to indicate an internal secretion of the organ in question. Thus, Svehla in regard to thymus. See Osborne and Vincent, Journal of Physiology, vol. xxv., 1900; Vincent and Sheen, loc. cit.; Vincent and Cramer, loc. cit.

[16] Comptes Rendus de la Société de Biologie, pp. 421 et 422, Paris, Juin, 1889.

[17] Comptes Rendus de l'Académie des Sciences, tome cxv., pp. 1399-1400; Archives de Physiologie, 1893, p. 202.

[18] Archives de Physiologie, 1893, p. 761.

[19] Journal de Physiologie et de Pathologie Générale, 1901, vol. iii., p. 901.

[20] Archives de Physiologie, vol. xxi., p. 651, 1889; Comptes Rendus de la Société de Biologie, pp. 415, 420, 430, et 454, 1889; THE LANCET, July 20th, 1889, p. 105.

marked "rejuvenating" effects. It is probable that a good deal of Brown-Séquard's personal benefit under this treatment is to be attributed to suggestion. More recently Poehl[21] asserts that he has prepared a substance, *spermin*, to which he gives the formula $C_5H_{14}N_2$, which has a very beneficial effect upon the metabolism of the body. He believes that this spermin is the substance which gives to the testicular extracts prepared by Brown-Séquard their stimulating effect. He claims for this substance an extraordinary action as a physiological tonic.[22] Zoth[23] and also Pregel[24] seem to have obtained definite proof, by means of ergographic records, of the stimulating action of the testicular extracts upon the muscle-nerve apparatus in man. They find that injection causes not only an increase in the muscular work but lessens the subjective fatigue sensations.

There are, however, other reasons for thinking that the testis pours into the blood stream certain materials which are essential for the proper development and maintenance of vigour. The condition of persons in whom the testes have not descended or from whom the testes have been removed is strong evidence that, besides the function of the preparation of the specific reproductive elements, the organ has other important duties to perform. Shattock and Seligmann[25] have studied the effect of occlusion of the vasa deferentia in sheep and fowl and find that this does not hinder the full development of the secondary male characters. Since castration does hinder this development it follows that the metabolic results arising from the functions of the testis must be attributed to the elaboration of an internal secretion and its absorption into the general circulation. According to these authors the interstitial cells of the stroma have characters so unmistakeably glandular that some secreting function must be assigned to them and they may possibly be responsible for the internal secretion just referred to.

There is an important difference in the result obtained when the whole cord is ligatured from that obtained when the vas only is tied. In the former case all sexual activity comes to an end; in the latter after a short interval of time the animal remains just in the same condition as the control, although, of course, reproduction is impossible in both cases. After ligature of the vas the interstitial cells remain unaltered although the spermatogenic tissue degenerates.[26] In the case of the ovary Knauer[27] has shown that removal of the organ prevents the occurrence of the œstrous cycle but that if ovarian tissue be grafted into the muscles of the animal the "periods" commence again. This is almost positive evidence that the occurrence of the phenomenon depends upon some material manufactured in, and poured out into the blood by, the ovary and that this pouring out causes important changes in the rest of the genital system.

Within the last two or three years a considerable amount of work has been done upon the structure and functions of the corpus luteum. The idea that this body might be an organ with an internal secretion was first conceived by Gustav Born[28] who suggested that the function of the internal secretion was to subserve the fixation and development of the impregnated ovum in the uterus. This idea was never published but was bequeathed to Fraenkel[29] to work out. This author believes that not only does the corpus luteum minister to the special needs of the gravid uterus but that upon its secretory activity depends also the occurrence of the œstrous cycle. The arguments put forward are not entirely satisfactory and it is not easy to see how this author would explain the occurrence of the first œstrus in young animals.[30] The theory that the corpus luteum is a gland with an internal secretion has also been brought forward by Prenant.[31] This writer points out that its morphological characters are those of a glandular apparatus without a duct; and that the cells of the corpus luteum elaborate material in their interior as has been recently described by Regaud and Policard.[32] Prenant believes that the purpose of the corpus luteum is probably to prevent ovulation in the period between successive œstrous periods or during pregnancy. This theory is supported by Sandes[33] who worked at the formation of the corpus luteum in Dasyurus. Why it should be necessary for an animal to elaborate an organ having this function does not seem clear, especially in view of the fact stated by Sandes[34] that the ova degenerate in the ovary and are not preserved for succeeding ovulations.

Working in conjunction with Dr. F. H. A. Marshall I have performed a series of experiments in which extracts made from ovaries in a pro-œstrous or œstrous condition were injected into a bitch at a period as remote as possible from the œstrous one. In some of these experiments a swelling of the vulva and other slight signs of the œstrous condition were induced but the results were not decisive enough to warrant us publishing them. Since then Marshall and Jolly[35] report that "heat" or a transient condition resembling it can be produced by the injection of such extracts and that when œstrous or pro-œstrous ovaries are successfully grafted into an animal previously deprived of its ovaries the condition produced is identical with a normal heat and that irrespective of the situation of the graft. These authors consider that the ovary is an organ providing an internal secretion which is elaborated by the follicular epithelial cells or by the interstitial cells of the stroma. This secretion circulating in the blood induces menstruation and heat. After ovulation, which takes place during œstrus, the corpus luteum is formed and this organ provides a further secretion whose function is essential for the changes taking place during the attachment and development of the embryo in the first stages of pregnancy.

A recently discovered and extremely interesting example of internal secretion is furnished by the mechanism of pancreatic secretion. The secretion of the pancreatic juice is normally evoked by the entrance of acid chyme into the duodenum and is proportional to the amount of acid entering.[36] This secretion does not depend on a nervous reflex and occurs when all the nervous connexions of the intestine are destroyed.[37] The contact of the acid with the epithelial cells of the duodenum causes in them the production of a body (secretin) which is absorbed from the cells by the blood current and is carried to the pancreas, where it acts as a specific stimulus to the pancreatic cells, exciting a secretion of pancreatic juice proportional to the amount of secretin present.[38] There are probably numerous other examples of this chemical interaction of certain tissues with others more or less remote and many animal processes at present attributed to nervous influences or not understood at all will in future, it may be surmised, be explained by reference to some kind of internal secretion.[39]

THE SUPRARENAL CAPSULES.

A. Effects of ablation and disease.—In considering the facts at our disposal bearing upon the probable functions of the suprarenal capsule it is in the first place essential to insist upon the dual nature of the organ. Each capsule, in fact, consists of two separate and distinct organs, developed in quite different ways, having a different histological structure, presenting different micro-chemical reactions, and characterised by totally distinct chemical and pharmacological properties.[40] Practically, all our physiological

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[21] Zeitschrift für Klinische Medicin, 1894, Band xxvi., S. 135.
[22] See also Dixon, Journal of Physiology, vol. xxvi., 1900-01, p. 244.
[23] Pflüger's Archiv, 1896, Band lxii., S. 325.
[24] Ibid., S. 379.
[25] Proceedings of the Royal Society, vol. lxxiii., No. 488, Feb. 11th, 1904.
[26] These results pointing distinctly to an internal secretion on the part of the interstitial cells have been furnished to me by Dr. Copeman whose work has not yet been published. His results are generally in agreement with those of Ancel and Bonin, Recueil de Médecine Vétérinaire, Jan. 15th, 1904.
[27] Centralblatt für Gynäkologie, 1896, vol. xx., S. 594, No. 29; ibid., 1898, vol. xxii., p. 201; Wiener Klinische Wochenschrift, 1899, xii. Jahrg., p. 1219, No. 49; Archiv für Gynäkologie, Band lx., Heft 2. See also Steven's Journal of Obstetrics and Gynæology, vol. v., No. 1, January, 1904, p. 11.
[28] Cited by L. Fraenkel, Archiv für Gynäkologie, Band lxviii., Heft 2, S. 438, 1903.
[29] Loc. cit.
[30] Marshall: Quarterly Journal of Microscopical Science, 1904.
[31] Revue Générale des Sciences, 1898, pp. 646-50.
[32] Comptes Rendus, Association d'Anatomie, 3ème session, 1901, pp. 45-61; Comptes Rendus de la Société de Biologie, tome liii., 1901, pp. 615-16; ibid., tome liii., pp. 470 et seq.
[33] Proceedings of the Linnæan Society of New South Wales, 1903, vol. xxviii., part 2, No. 110.
[34] Loc. cit.
[35] Proceedings of the Royal Society, 1905.
[36] Pawlow: Die Arbeit der Verdauungsdrüsen, Translation from the Russian, Wiesbaden, 1898. Also Le Travail des Glandes Digestives, Paris, 1901.
[37] Bayliss and Starling: Journal of Physiology, vol. xxviii., 1902, p. 353.
[38] Baylis and Starling, loc. cit.
[39] Starling has recently found that injection of extracts of fœtus into a virgin rabbit causes growth of the mammary glands, while such injections into a multiparous animal cause secretion of milk. He suggests the name "hormone" (from ὁρμάω = I excite or arouse) for these various substances which act as chemical messengers. See Croonian Lectures, 1905, also THE LANCET, 1905.
[40] This view is now generally accepted, but in 1896 the subject had not passed out of the realm of discussion. See Creighton, Goulstonian Lectures, 1895, Brit. Med. Jour., March 23rd, 1895; also Swale Vincent, Birmingham Medical Review, August, 1896.

information has reference to the medullary portion. The subject of the comparative anatomy and physiology cannot be treated here.[41]

Since the time of Addison,[42] who described the disease now known by his name, numerous extirpation experiments have been performed upon many kinds of animals with somewhat varying results.[43] The general result, however, is that death takes place with great rapidity in most animals after double suprarenal removal. In all these experiments both medulla and cortex have, of course, been removed. But it is important to note that an animal may survive the removal of both suprarenal capsules. Thus the results of Brown-Séquard,[44] who found removal to be rapidly fatal, could not be confirmed by certain other workers of this period.[45] Although later work[46] seems to have confirmed in a general way the statements of Brown-Séquard, yet we cannot disregard the very considerable number of exceptions. Moore and Purinton,[47] for example, record survival of a goat for 22 days after complete removal of both suprarenal capsules and they state "survival would apparently have been indefinite, for the animal, so far as could be observed, was unaffected by the loss of the glands. It is, of course, impossible to conclude, notwithstanding the most careful post-mortem examination, that the animal did not possess *somewhere* accessory suprarenals, which vicariously took on the functions of the removed glands. Still, we are inclined to regard such a solution of the survival as improbable; certainly, there were no glands visible to us at all resembling suprarenals in either thorax or abdomen and nothing which gave a positive answer to the chemical test for the suprarenal chromogen. Any possible accessory glands must, therefore, have been either microscopic in size or situated outside the regions where their existence was to be expected."

With regard to the presence of accessory organs we must bear in mind that if the medulla is the essential or more important organ, then, strictly speaking, there are *always* accessory organs left behind after removal of the suprarenal capsules; for groups of "chromaffin cells" are found in the sympathetic ganglia of man and mammals,[48] birds, and other vertebrates. Recently, too, Zuckerkandl[49] has described what he calls "Nebenorgane des Sympathicus" in the human subject. These consist of chromaffin cells and extracts from them have the same powerful effect upon the blood pressure as have extracts of the medulla of the suprarenal capsule.[50] On the other hand, the ordinary "accessory suprarenal" consists entirely of cortex and this probably applies to those which may be found occasionally in the neighbourhood of the reproductive organs.[51] The symptoms described by most authors are almost identical with those of pronounced Addison's disease—muscular weakness, loss of appetite, loss of tone of the vascular system, and, as a primary cause of death, paralysis of the respiratory muscles. Moore and Purinton[52] working with cats found extensive ante-mortem clotting in the right heart, superior vena cava, or pulmonary artery in three out of seven experiments, and in these cases the duration of life was shorter than in those in which no such clots were found. Pigmentation of the skin has been recorded by Nothnagel[53] after crushing of the capsules and also by F. and S. Marino-Zucco[54] after inoculating the suprarenals of rabbits with "pseudo-tubercle bacillus." Tizzoni[55] also states that he has obtained skin pigmentation in rabbits.

B. General physiological effects of extracts of the suprarenal capsules: Effects of subcutaneous injections.—After sufficiently large doses of suprarenal extract injected subcutaneously we get slowed muscular movements, paresis, and finally paralysis of the limbs (hind limbs always becoming affected first), bleeding from the mouth and nostrils, hæmaturia (not observed in rabbits), breathing rapid and shallow at first, finally becoming deep and infrequent, and occasionally convulsions resembling those of asphyxia preceding death, before which the temperature often falls very low. The paralysis is central. The effects, just as those to be presently described obtained on intravenous injection, are due to the medulla of the suprarenal capsules, the cortex containing no toxic substance. The effects are specific to the suprarenals and not common to other gland extracts. The toxic material is easily eliminated in some way or other; this accounts for the large dose required and the ease with which recovery takes place. Idiosyncrasy plays a large part in the conditions. A partial immunity can be set up by giving doses insufficient to kill.[56] In 1901 Blum[57] discovered that the subcutaneous administration of extracts of the suprarenal bodies produces diabetes in rabbits and dogs.[58] Working with adrenalin, the isolated active principle of the suprarenal medulla (*vide infra*), Drummond[59] found congestion of organs and histological changes which indicate that the substance acts as a protoplasmic poison.[60]

C. Special physiological effects of extracts of the suprarenal capsules: Effects of intravenous injections.—Our knowledge of the effects of intravenous injection of suprarenal extracts dates from the discovery of Oliver and Schäfer[61] in 1894 that such injection produces a powerful action on the muscular system, especially on the muscular walls of the blood-vessels and the heart. The extracts have an action upon skeletal muscle comparable to that produced by a small dose of veratria. Upon the heart the effect differs according as the vagi are cut or uncut. When the vagi are uncut the action of the extract is to inhibit the auricular contractions, while the ventricle continues beating with an independent slow rhythm and the pulse is very slow. If the vagi are cut or if their cardiac ends be paralysed by atropine the effect on the heart is just the reverse, and this produces a rise of the blood pressure. But there is also a marked direct effect upon the arteries shown by a considerable rise of blood pressure even with uncut vagi. "But with the vagi cut or paralysed by atropine the rise can only be characterised as enormous."[62] The contraction of the arterioles is due to a peripheral action of the drug, since it takes place when the central nervous system is destroyed.[63] The effect on the blood pressure passes off in a few minutes and, according to Schäfer,[64] the most probable explanation of the disappearance of the effect seems to be that the active principle becomes packed away and eventually rendered innocuous in certain organs. That the muscles take most part in this storage is probable from the fact that the physiological effects upon the skeletal muscles are manifested for a long

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[41] The following papers may be consulted: Swale Vincent, Proceedings of the Royal Society, vols. lxvi. and lxvii.; Internationale Monatsschrift für Anatomie und Physiologie, 1898, Band xv., Hefte 10 und 11; Kohn, A., Archiv für Mikroskopische Antomie, Band lxvii., 1903; also Vincent, Journal of Anatomy and Physiology, vol. xxxviii., 1904.

[42] On the Constitutional and Local Effects of Disease of the Suprarenal Capsules, London, 1855.

[43] For a résumé of the history see Schäfer's Text-book, vol. i., p. 948, Edinburgh and London, 1898.

[44] Comptes Rendus de l'Académie des Sciences, Paris, 1856; pp. 422 and 542; Archives Générales de Médecine, Paris, 1856, Journal de la Physiologie de l'Homme, Paris, 1858, tome i., pp. 160.

[45] Philippeaux, Comptes Rendus de l'Académie des Sciences, Paris, 1856; Gratiolet, ibid; G. Harley, British and Foreign Medico-Chirurgical Review, London, 1858, vol. xxi., p. 204.

[46] Tizzoni, Archives Italiennes de Biologie, Turin, 1886, tome x., p. 372; Beiträge zur Pathologischen Anatomie und zur Allgemeinen Pathologie; Rath, Jena, 1889, Band vi., S. 1.; Abelous and Langlois, Comptes Rendus de la Société de Biologie, Paris, 1891, p. 835; 1892, p. 388; Langlois, ibid., 1893, p. 444; also in tome iv. of Travaux du Laboratoire de Ch. Richet, 1897; Schäfer, Text-book of Physiologie, vol. i., p. 949.

[47] American Journal of Physiology, vol. iv., 1900, p. 57, and vol. v., 1901, p. 182.

[48] Stilling, Revue de Médecine, November, 1870; Recueil inaug. de l'Université de Lausanne, 1892; Anatomischer Anzeiger, Band xv., 1899 Kohn, Archiv für Mikroskopische Anatomie, Band lvi., 1900, S. 81; Anatomischer Anzeiger, Band xv., Nov. 21st, 1899. Kose, Anatomischer Anzeiger, Band xxii., 1902, S. 162.

[49] Verhandlungen der Anatomischen Gesellschaft, Bonn, Mai, 1901. Jena.

[50] Biedl and Wiesel: Archiv für die Gesammte Physiologie, Band xci., 1902.

[51] There can be no doubt that in many animals removal of the suprarenal capsules is a very difficult and dangerous operation, owing to the close proximity of large blood-vessels and nervous structures.

[52] Loc. cit.

[53] Zeitschrift für Klinische Medicin, Berlin, 1879, Band i., S. 77.

[54] Riforma Medica Roma, 1892, tome i.

[55] Loc. cit.

[56] The immunity first observed by the present writer working with suprarenal extracts has been recently recorded by Seawelew (Wratschebnaja Gazetta, No. 19, 1904, abstract in Biochemisches Centralblatt, Band iii., p. 124) in the case of pure adrenalin.

[57] Deutsches Archiv für Klinische Medicin, Band lxxi., p. 146.

[58] See also Zuelzer, Berliner Klinische Wochenschrift, 1901, p. 1209; Metzger: Münchener Medicinische Wochenschrift, 1902, p. 478; Herter and Richards, New York Medical News, 1902, p. 201; Herter and Wakeman, Virchow's Archiv, 1902, Band clxix., p. 479; Paton, Journal of Physiology, 1903, vol. xxix., p. 286.

[59] Journal of Physiology, vol. xxxi., p. 81.

[60] Other papers on the effects of subcutaneous injections are Oliver and Schäfer, Journal of Physiology, 1895, vol. xviii., No. 3, p. 235; Vincent, ibid., vol. xxii., Nos. 1 and 2, 1897, and No. 4, 1898; also Proceedings of the Physiological Society, June 12th, 1897.

[61] Proceedings of the Physiological Society, March, 1894, and March, 1895; Journal of Physiology, 1894 and 1895; ibid., 1895, vol. xviii., No. 3, p. 230.

[62] Schäfer: Text-book of Physiology, vol. i., p. 964.

[63] Oliver and Schäfer, loc. cit. Swale Vincent, Proceedings of the Royal Society, 1897, vol. lxi., p. 66.

[64] Text-book, p. 964.

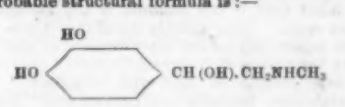
time after the effects upon the heart and arteries have disappeared. The physiologically active material is yielded entirely by the medulla of the capsules,[65] the cortex being inactive. It is found, too, in the bodies of elasmobranch fishes which correspond morphologically to the medulla of the mammalian organ[66] and probably in chromaffin tissue generally.[67]

D. Mode and seat of action of suprarenal extracts.—It was shown as stated above by Oliver and Schäfer that the effects of suprarenal extract are peripheral and not central.[68] More recent investigations enable us to go a step farther. It has been shown that in mammalia if the vagi have been first paralysed with atropine suprarenal extract produces both augmented systole and acceleration of the heart.[69] Both of these effects of adrenalin may be abolished by the injection of large doses of apocodeine. Thus Dixon[70] found that in a cat half a cubic centimetre of a 1 in 30,000 solution of adrenalin increased the heart rate from 92 to 211 per minute. After the injection of 100 milligrammes of apocodeine the same injection of adrenalin now only increased the rate from 93 to 101 per minute. A futher injection of 200 milligrammes of apocodeine was then administered and caused the rate of the heart to diminish to 67 per minute. Adrenalin even in large doses now produced no acceleration and there was no augmentation of the systole. Dixon, therefore, concludes that the whole effect of suprarenal extract on the heart is a stimulation of the sympathetic nerve endings. This view is supported by the observations of Scott-Macfie[71] who found that extracts of suprarenal capsules and other tissues are without effect upon the embryonic heart, upon leucocytes, and upon cilia. Again, the experimental work of Brodie and Dixon,[72] who find that there are no vaso-motor nerves for the pulmonary arterioles and that adrenalin, when perfused through the pulmonary vessels, produces no constriction, is decidedly in favour of the theory that adrenalin acts upon nerve tissue only.[73]

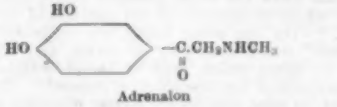
On the other hand, according to Boruttau,[74] the action is direct on somatic muscle, as it occurs in a curarised animal[75] and, according to Lewandowsky,[76] the dilatation of the pupil and other eye effects are produced by a direct action of suprarenal extract on the unstriated muscle. This was inferred from the fact that the extract was still effective after the superior cervical ganglion had been excised and the nerve fibres proceeding from it allowed to degenerate. With regard to somatic muscle, Langley[77] is inclined to accept Lewandowsky's view; while in the matter of plain muscle he put forward the generalisation that the effect of adrenalin is the same as the effect of exciting the sympathetic nerves supplying that particular tissue. Elliott[78] shows that after section of both constrictor and inhibitory nerves going to the plain muscle of the dilator pupillæ and after their degeneration for three days or ten months the plain muscle will respond to adrenalin with greater rapidity and longer persistence than does the iris the nervous relations of which are intact. Therefore, according to this writer, it cannot be that adrenalin excites any structure derived from, and dependent for its persistence on, the peripheral neuron. These different results do not accord very well together but the evidence that adrenalin acts directly on muscle and not on the nerve endings in it seems insufficient.[79] The fact that adrenalin has functionally such an intimate relation to the sympathetic nervous system is particularly interesting when we remember the accepted origin of the chromaffin tissues.[80]

According to some recent observations by Langley[81] in all cells two constituents at least must be distinguished: (1) substance concerned with carrying out the chief functions of the cells, such as contraction, secretion, the formation of special metabolic products; and (2) receptive substances especially liable to change and capable of setting the chief substance in action. According to this author nicotine, curare, atropine, pilocarpine, strychnine, and most other alkaloids, as well as the effective material of internal secretions, produce their effects by combining with the receptive substance and not by an action on axon endings if these are present, nor by a direct action on the chief substance.

E. The chemical nature of physiologically active substance.—Abel separated an alkaloid which he called *epinephrin*,[82] von Fürth isolated another substance which he called *suprarenin*,[83] but the active principle was first obtained in a crystalline form by Takamine[84] and Aldrich[85] independently. The method in both cases was the same. Very concentrated suprarenal extracts were largely freed from inactive substances by treatment with alcohol, lead acetate, &c. Then the active principle was precipitated in the form of microscopic crystals by the addition of concentrated ammonia. The precipitate was next purified by repeatedly dissolving in acid and re-precipitating with ammonia. The needles or rhombic plates so obtained Takamine called *adrenalin*. It is probable that these three names really represent one and the same substance having the empirical formula $C_9H_{13}NO_3$ and the probable structural formula is:—



If adrenalin be oxidised we get a substance having the formula:



Adrenalon

This substance, *adrenalon*, has been prepared synthetically by Friedmann,[86] Stolz,[87] and Dakin.[88] On reduction it ought, of course, to yield adrenalin, but the substances which have been obtained in this way from synthetical adrenalon seem to differ somewhat from the natural product, though they are nearly as active.[89]

F. Theories as to the function of the suprarenal capsules.—It has already been pointed out that the suprarenal capsule consists of two distinct organs, the cortex and the medulla. As the embryology of these two constituent tissues is so totally distinct, it is probable that we ought to search for a separate function for each and we have no right to assume that these functions would necessarily be intimately related

[65] Oliver and Schäfer, loc. cit.
[66] Swale Vincent, loc. cit.
[67] As already referred to above, Biedl and Wiesel have proved this, for the Nebenorgane of Zuckerkandl. Cleghorn (American Journal of Physiology, vol. ii., July 1st, 1899) tested the action of extracts of sympathetic ganglia. Instead of obtaining the rise of blood pressure characteristically produced by extracts of suprarenal medulla this author got, on the contrary, a fall. This was shown by Osborne and Vincent (Proceedings of the Physiological Society, Feb. 17th, 1900; Journal of Physiology, vol. xxv., p. 9; also Journal of Physiology, 1900, vol. xxv.) to be the usual physiological action of extracts of nervous tissues in general. In sympathetic ganglia the chromaffin cells are not present in sufficient amount to produce their physiological effect. I have also repeatedly failed to obtain any physiological effect from the injection of extracts of carotid glands, but here again the difficulty is probably in isolating sufficient of the chromaffin tissue.
[68] This applies to the effect on the blood pressure. Some of the general physiological effects seem to be central (vide supra).
[69] Oliver and Schäfer, loc. cit.; Gottlieb, Skandinavisches Archiv für Physiologie, 1898, vol. viii., p. 147; Hedbom, Schmiedeberg's Archiv, Band xxxviii., p. 99; Cleghorn, American Journal of Physiology, 1899, vol. ii., p. 283.
[70] Journal of Physiology, 1904, vol. xxx., p. 125.
[71] Ibid., 1905, vol. xxx., p. 289.
[72] Ibid., vol. xxx.
[73] I.e., upon "nerve endings"—the link between nerve-fibre and muscle-fibre.
[74] Archiv für die Gesammte Physiologie, 1899, Band lxxviii., p. 112
[75] But it does not follow, of course, that because a curarised muscle cannot be excited through its nerves that therefore the *whole* of the nerve ending is paralysed.
[76] Archiv für Anatomie und Physiologie, 1899, p. 360.
[77] Journal of Physiology, 1901–02, vol. xxvii., p. 245.
[78] Ibid., vol. xxxi., p. 20; Proceedings of the Physiological Society, May 21st, 1904.
[79] It may be that the action of adrenalin is different in some respects from that of crude extracts with which, of course, the earlier observers worked. The whole subject requires further investigation.
[80] See Kohn, Kose, &c., loc. cit.
[81] Journal of Physiology, 1905–06, vol. xxxiii., p. 400.
[82] Johns Hopkins Hospital Bulletin, Nos. 90, 91, 1898; American Journal of Physiology, March 1st, 1899; Zeitschrift für Physiologische Chemie, 1899, Band xxviii., p. 318.
[83] Zeitschrift für Physiologische Chemie, Band xxviii., 1897.
[84] American Journal of Pharmacy, 73, November, 1901; Preliminary Communication in Society of Chemical Industry, New York, January, 1901.
[85] American Journal of Physiology, 5, p. 457, August 1st, 1901.
[86] Hofmeister's Beiträge, Band vi., p. 92.
[87] Berichte der Deutschen Chemischen Gesellschaft, Band xxxvii., p. 4149.
[88] Journal of Physiology, vol. xxxii., p. 34; Proceedings of the Physiological Society, 1905.
[89] Other recent papers are: Pauly, Berichte der Deutschen Chemischen Gesellschaft, Band xxxvi., p. 2944; ibid., Band xxxvii., p. 1388; Jowett, Proceedings of the Chemical Society, 1904; Polte, Archiv für Augenheilkunde, Band li.; Abderhalden und Bergell, Berichte der Deutschen Chemischen Gesellschaft, Band xxxvii., p. 2022; also Halle, Hofmeister's Beiträge, Band viii., v. bis vii. Heft, 1906, and Friedman, ibid., Band viii., iii. und iv. Heft, 1906.

to each other. All the well-ascertained facts which appear to point to a definite physiological significance, apply to the chromaffin cells and not the greater part of the dual body. The two chief theories are (1) the "auto-intoxication theory"; and (2) the theory of "internal secretion." The former was first clearly stated by Abelous and Langlois[90] who performed a series of extirpation experiments upon frogs. These authors found that the blood of animals dying as the result of suprarenal extirpation is toxic for other animals which have recently been deprived of their capsules. The symptoms caused by this blood are said to be those of curari poisoning and the conclusion reached by Abelous and Langlois was that after suprarenal extirpation one or several toxic substances, the products of muscular metabolism, accumulate in the organism and that the function of the glands is to remove or destroy these. But, as pointed out by Schäfer,[91] it is probable that the blood of an animal dying slowly as the result of any disease, would be to some extent toxic and the toxic principles would more powerfully affect animals the resisting power of which had been lessened by a recent severe operation. Further, the suprarenals produce a material which has entirely different properties from those stated to be possessed by animals deprived of their capsules.

The "internal-secretion" theory is briefly as follows. The suprarenal capsules are continually secreting into the blood an active material, adrenalin, which is of benefit to the muscular contraction and tone of the cardiac and vascular walls and even of the skeletal muscles. Now the theory of Abelous and Langlois was stated before the effects of injection of the extract of suprarenal medulla were known but Abelous[92] has recently published a paper in which he advocates the view originally held by the joint authors. Although the theory of internal secretion is the one which is most generally accepted and which appears to have the balance of probability on its side, one is bound to admit that the direct evidence in favour of the secretion of material into the blood stream is very slight. It was stated by Cybulski,[93] and repeated by Langlois[94] and Biedl,[95] that a rise of arterial blood pressure could be obtained by injection of defibrinated blood obtained from the capsular vein. Schäfer[96] has been unable to confirm this and quite recently Blum[97] has denied that such results can be obtained.[98] This author, indeed, strongly opposes the theory of internal secretion, believing the "Entgiftung" or "auto-intoxication" theory to be the true one.[99] The difficulty is to account for the presence in the suprarenal medulla of a substance having such extraordinary physiological properties as adrenalin. The auto-intoxication theory would necessitate our assuming that this substance is a waste product soon about to be eliminated, while the internal-secretion theory supposes that it is a product of glandular activity manufactured for use in the economy. The time is not ripe for any dogmatic statement as to which is the true theory, nor, indeed, for any very definitely formulated views as to functions of the suprarenal capsules.

(To be continued.)

[90] Loc. cit.
[91] Text-book of Physiology, vol. i., p. 950.
[92] Soc. Biologie, Band lvi., pp. 951–58.
[93] Gaz. lek., Warszawa, and Anz. der Akademie der Wissenschaften in Krakau, 1896; Centralblatt für Physiologie, Leipzig und Wien, 1896, S. 172.
[94] Thèse de Paris, 1897, p. 132.
[95] Archiv für die Gesammte Physiologie, 1897, Band lxvii.
[96] Text-book, loc. cit.
[97] Archiv für die Gesammte Physiologie, 1904, Band cv.
[98] If the medulla of the suprarenal capsule be really continually pouring into the suprarenal vein small quantities of adrenalin it ought to be possible, by collecting large quantities of blood coming from the organ, to get some rise of blood pressure. But the experiment is not an easy one; it must be remembered that in carnivora there is, properly speaking, no capsular vein. The vessel passing from the abdominal wall receives some tributaries from the capsule and unless special precautions are observed blood taken from the large vessel on the front of the capsule consists largely of blood which has not come from the suprarenal at all. Mr. Jolly and myself have performed two experiments in which as large a quantity of blood as possible was collected through the capsule. A saline decoction of this was then injected into a cat but in both cases instead of getting a rise of blood pressure we got a marked fall, as with an extract of any other animal substance.
[99] It may, of course, be that the true view embraces both conceptions, that the organ secretes materials which either *in situ* or in other regions of the body have an antitoxic action. Kohn (Prager Medicinische Wochenschrift, 1898, Jahrg. 23, No. 17; Archiv für Mikroskopische Anatomie, Band liii., 1898; Anatomischer Anzeiger, Band xv., 1899; Archiv für Mikroskopische Anatomie, Band lvi., 1900) objects to the theory of internal secretion on the part of the suprarenal medulla on morphological and histological grounds. He does not consider the chromaffin tissue to be glandular at all. I have discussed this point in a previous paper (Anatomischer Anzeiger, Band xviii., 1900, S. 71).

THE CURE OF CHRONIC SUPPURATION OF THE MIDDLE EAR WITHOUT REMOVAL OF THE DRUM OR OSSICLES OR THE LOSS OF HEARING,

WITH TEN CASES.

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ON Dec. 5th, 1904, I read a paper before the Otological Society of the United Kingdom, which afterwards was published in THE LANCET,[1] on "The Restoration of Hearing after Removal of the Drum and Ossicles by a Modification of the Radical Mastoid Operation for Suppurative Ear Disease" (founded on the experience of 400 operations). Early in that communication occurred the following passage: "The system I adopt, or some slight modification of it, will ultimately be adopted as a means of restoring hearing to large numbers of persons afflicted with suppurative ear disease." The modifications described below and the cases quoted, which have been examined by several otologists, will show that forecast to have had some foundation, for the change in procedure has resulted in the improvement in the hearing power of all the patients (ten) on whom this operation has been performed.

Much time was spent in studying the subject before the measures described below were put into practice. First, a glance was taken at the physiology of the mucous cavities of the ear, and their drainage was found to be dependent on one small channel, no doubt effective in health but not capable of expansion to meet the requirements of disease, and, indeed, liable to be contracted as a result of the very disease which increases the strain upon its capacity. The modifications which were introduced by disease were brought under observation, including the additional drainage of the tympanum resulting from a perforation of the membrane. The changes most commonly found in the condition of the walls and contents of the tympanum were considered as well as the possibility of recovery from these conditions. Next, the characters of the discharge came under observation and their effect on the freedom of drainage through the Eustachian tube, and especially through the aditus, should granulations or other form of obstruction arise in that passage. Observations had previously been made to the effect that the same condition had frequently appeared to be present after suppuration of three months' duration as after three or even 30 years; much instruction was derived from cases which had been seen on the operating table and these also gave hints as to possibilities. Notes had been taken concerning the methods and routes adopted by nature, either alone or assisted by surgery. Memoranda were made on all these and other points, but it is impossible even to allude to them here, much more discuss them in the small space available; therefore these remarks are mainly in abstract form and much that is important has to be excluded.

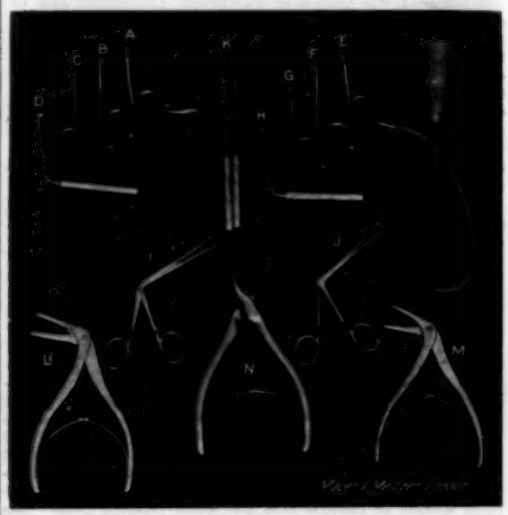
As the result of a long consideration of this subject one salient feature has always stood out prominently—namely, the importance of the cavity of the antrum—inasmuch as the persistence of the disease appeared to depend on this chamber rather than on the tympanum and therefore it became necessary to regard it as the key of the position. A few remarks concerning it will therefore not be out of place. It seemed to me that if the cavity of the antrum remained unaffected there was a good prospect that the tympanum might not become diseased past recovery and that if it became seriously diseased no treatment of the tympanum through which antral discharges must pass could be relied upon to effect a cure.

The drainage of the antrum, which from its proximity to, and liability to involve, the most vital parts should be called the danger zone of this disease, takes place through a small unyielding bony passage, the aditus, which may be obstructed more or less easily according to its size, which is variable. It does not need to be completely and rigidly obstructed for enlargement of the cavity behind it to take

[1] THE LANCET, Dec. 24th, 1904, p. 1767.

place. A little pressure long continued may expand it in any direction; upwards to the middle fossa less than one-eighth of an inch away, downwards and outwards to the mastoid process, backwards, or backwards and downwards to the lateral sulcus and sinus. Among the cases recorded below are examples of all these conditions. It was observed that erosion through the bone above the antrum into the middle fossa was very common and that erosion from the attic into the middle fossa above was very rare in spite of the fact that the thickness of the bone over the latter cavity was less than over the former. Surely there must needs be something to account for this fact; and it is not unreasonable to attribute it, partly or mainly, to an interference with the drainage through the aditus. Such obstruction may be slight, probably it is not often complete enough to stand pressure sufficient to cause pain, for the antrum is a sinus of but little sensibility, yet it appears to be enough to cause expansion in that direction which is most facilitated by the arrangement of the bone cells in this locality. Further, it is a cavity endowed with just those conditions which are favourable to the propagation of bacteria when they have once found entrance, and these too may bear a share in the course of this disease and should they penetrate the inflammatory protecting zone which is usually present they may travel far and wide without the process being associated with much pain to indicate the danger and thus lead to disastrous results. It is a frequent occurrence during the performance of operations on the mastoid process for chronic suppuration for observation to be made regarding the futility of expecting to cure the disease there and then exposed by any treatment through the meatus. The question may be asked, What prospect is there that the antrum will resume a healthy condition after it has once become infected and therefore the source of discharges which will by their irritating qualities lead to such an alteration in the mucous membrane of the aditus, tympanum, and Eustachian tube, as to prevent those passages allowing of proper drainage? And conversely, what chance has the tympanum of recovering a healthy condition if it has to serve as a drain for the transmission of such irritating productions of the antrum as get forced out through the aditus? It must be allowed that the prospect and the chance are not enough to be relied upon as probabilities. Then what is to be done? "Let us eliminate the antrum, the danger zone." Well, suppose the antrum eliminated and the passage of all irritating discharges from it through the tympanum stopped, what then? Is the condition of the tympanum (the attic is included) such that there is no probability of repair? My experiences lead me to the opinion that in the majority of cases it is not. This opinion is the result of personal observations of hundreds of mastoid operations and therefore of an acquaintance with the great damage to walls and contents of tympanum occasionally seen after scarlet fever and other diseases but which are fortunately not the rule, also of a knowledge of the fact that the radical operation is based on the assumption that the tympanum in chronic suppuration of the middle ear is usually in such a condition that it cannot recover health and function and must be emptied of its contents in order that the suppuration may be cured, an assumption which is surely supported neither by pathology nor clinical experience. Further, the paramount position which the radical operations hold in the estimation of otologists is a tacit acquiescence in the opinion that chronic suppuration of the middle ear is generally considered to be incurable by any other means. The various pathological conditions which may exist in the tympanum in this disease are well known but that they are frequently of a kind that prohibits any probability of recovery is not in harmony with my own observation and experience and it is these alone that have led me to the opinion, firstly, that the tympanum and its contents are not, as a rule, so far diseased as to be beyond repair; and secondly, that the condition of the Eustachian tube has a most important bearing on the result, for unless that passage be in a thoroughly efficient condition, the perforation of the membrane cannot heal nor the tympanum be restored to health. Naturally, therefore, the following conclusions were arrived at: that, given elimination of the antrum with its foul discharges and consequent improvement in the patency of the tympanum and Eustachian tube; given also operative provision of access to the tympanic membrane, for observation and treatment, and to the aditus for the purpose of carrying out the treatment described below, it was considered more than probable that the remaining tympanic disease would offer no great difficulties and that the cavity would therefore resume its health and function. Having come to these conclusions it was determined to put them into practice by instituting an operation combining these essential points and thus to learn if the before-mentioned observations were reliable and deductions well founded.

Operation.—The procedure followed in the operation which has been practised in this investigation is in its opening stages similar to the early stages of the radical operation referred to above[2] but later there are modifications which will be described hereafter. The same cap can be



A, Large cannula for right aditus. B, Medium ditto. C, Small ditto. D, Bent probe ditto. F, Large cannula for left aditus (with air bag attached). F, Medium ditto. G, Small ditto. H, Bent probe ditto. I, Large polypus or granulation forceps. J, Small ditto. K, Long slender bent probes for preventing or breaking adhesions between tympanic granulations and the membrane. L, Long bone forceps. M, Short ditto. N, Avulsion ditto.

used to obviate the need of shaving the head and most of the same instruments are suitable. The antral probes, however, must not be used to locate the antrum through the tympanum, otherwise the hearing apparatus may be damaged. After the exposure and necessary treatment of the antrum and any communicating cells and cavities (as described in the paper referred to) any granulations found in the aditus must be removed and the orifice shaped to fit the cannula (see illustration). If this passage be unusually long it may be shortened by removing bone at its posterior end and then it should be plugged to prevent the entrance of blood or bony fragments. Next, a tiny wet cotton swab should be placed on the perforation of the tympanic membrane to keep fragments from entering the cavity through that aperture. Most of the posterior part of the bony meatus must now be removed and, if necessary, even portions of the upper and lower walls, according to the size of the meatus, until complete freedom of access to the drum membrane is obtained. Any polypi or protruding granulation should be removed with the special polypus forceps (see illustration) and with these also by pressing the blades against the membrane above and below the perforation the nearest granulations can be made to protrude through the perforation, when they, too, should be caught in the forceps and removed. These are the granulations which, if allowed to remain, would be likely to become adherent to the edge of the perforation and must therefore be removed or the membrane might afterwards become drawn inwards by contraction of those granulations. (See Case 9, where a granulation was left in the perforation in order to see what would take place.) In removing bone near the tympanic ring the risk of injury to the facial nerve must not be forgotten. The plugs on the membrane and in the aditus should now be

[2] THE LANCET, Dec. 24th, 1904, p. 1767.

removed, a cannula with a bag attached (see illustration) fitted in the aditus, and while the membrane is under close observation a blast of air should be sent through the attic and tympanum and the effect on the drum membrane observed. If the perforation appears to be too small to allow of egress of the contained tympanic secretion it can be enlarged; if in an unfavourable situation an entirely new opening can be made for the purpose of facilitating the exit of any material within the tympanum which is capable of expulsion by a powerful blast through the aditus. A syringe having been attached to the cannula, the whole tympanic passage should next be irrigated in the same direction with some bland antiseptic, and this fluid should finally be expelled by the air douche and the plugs replaced in the aditus and deep meatus. The cartilaginous meatal flap should be fashioned on the same plan as that advocated for the radical operation above referred to but should include rather more of the superior quadrant in order to allow throughout the entire after treatment of that uninterrupted view of the membrane which will insure the prevention of any untoward complication, such as an adhesion of the membrane to a granulation. The wound behind the ear must be completely closed with sutures and all after treatment carried on through the cartilaginous meatus, which should be enlarged sufficiently to permit the use of a drainage-tube about five-eighths of an inch in diameter, and as less bone is removed in this than in the radical operation this tube occupies a more oblique position. A wet dressing in this operation is the best and should be continued in diminishing sizes as long as an external dressing is needed.

After-treatment.—As the operation will have rendered the whole of the tympanic membrane visible the after-treatment has thereby been made interesting, not to say instructive; it will also be found to be of shorter duration and less painful than after the radical operation, for there is generally but little of the slow-healing pars petrosa involved and the sensitive tympanic cavity will not be exposed. On the day following the operation the dressing and the tube are removed, the entire cavity is cleansed and dried, swabbed with cocaine solution, and after a short interval dried again. Then the patient is ordered to hold his nose and blow air through the ear by Valsalva's method, while the effect on the membrane and perforation is carefully watched. The discharge expelled in this way is removed with tiny mops and the odour and consistency are noted; the cannula is then passed into the aditus and observation again taken of the effect on the membrane and perforation of the passage of a blast of air from this direction. The material thus expelled, which may be more purulent than that blown out by the patient's effort, should be removed, its odour and appearance noted and recorded, and if matters are progressing favourably the disagreeable qualities will no longer be present.

The condition of the hearing power should next be tested and recorded and it will usually be found to have already improved. Finally, after seeing that the membrane is free from the liability of adhesion to any granulation, a precaution necessary for several days, the cavity may be swabbed with iodoform emulsion, the same tube replaced, and a dressing applied. After trying several methods the following conclusion has been arrived at—viz., that after the initial cleansing patients who have undergone this operation recover as quickly without as with fluid douches through the ear, and this should not be surprising when it is remembered that air is the natural occupant of the free parts of the tympanum. Certainly no applications should be used which are likely to retard the growth of ciliated epithelium. If the aditus becomes prematurely blocked with granulations the passage of a probe will insure the freedom necessary for the use of the cannula but the probe (see illustration) should not be allowed to pass as far as the attic for fear of injury to the attachments of the incus. There is no difficulty in inserting the probe or cannula into the aditus without seeing it, if the drainage-tube be shaped properly, kept in position, and the soft parts fixed during the operation with the object of providing this necessary access. Within a day or two of the operation the discharge will often be seen to come mainly or entirely from the bone and soft parts and the secretions of the tympanum to have diminished to such an extent that the Eustachian tube is adequate for their removal.

The meaning of the sounds given out by the perforation when air is blown through the aditus is soon understood and a day or two after the operation it is usually found that nothing but mucus comes through; the sound during inflation will then probably be moist at the beginning only, for the amount of mucus being necessarily small it gets blown out at the commencement of the inflation. When passing a probe or cannula into the aditus the mucus in the perforation, and even the drum membrane itself, can be seen to bulge outwards. The granulations which at the operation were visible through the perforation shrink and in a few days disappear. May it not be presumed that those in the attic which cannot be seen will do the same? After trying various methods of after-treatment this plan through the enlarged cartilaginous meatus has been adopted as the simplest and most direct in all cases of mastoid disease when the antrum is opened, and if the lateral sinus should be situated far forward this is the only practicable route, and anyone who sees for the first time the ease and accuracy with which the after-treatment can be carried out in this way will wonder how he ever managed satisfactorily through an opening behind the ear, for then, if the meatus should happen to be small, it is impossible either to treat or to see the tympanic condition. As might be expected, the part of the wound in which the healing is most delayed is the bony cavity in the mastoid process, the aditus usually being closed, the perforation healed, and thus the hearing apparatus made safe, some time before the antral cavity has filled and granulated, but though unhealed the discharge given off by the granulations when not irritated by the contact of mucus is so trifling that a piece of wool placed in the concha to cover the tube has been found to be a sufficient dressing.

Nine of the cases, abridged details of which are given below, are numbered in the order in which the operations were performed during the four or five weeks which ended on June 17th, 1906.

CASE 1.—The patient was seven years old; sent up from the country; suppuration three months; cause unknown; no adenoids; a discharging sinus over the mastoid process; granulations visible in the tympanum; perforation at the back of the membrane three-sixteenths of an inch in the longest diameter.

At operation: Large cavity in mastoid process continuous with the antrum, filled with granulations and pus; granulations not removed from tympanum; cannula used regularly; perforation healed in 14 days. Hearing before operation watch on contact, after operation seven inches, which for this watch is excellent hearing. The patient's hearing is probably improving. She is in the country. A letter dated July 26th, 1906, says that she now hears the watch at 30 inches.

CASE 2.—The age of the patient was eight years. Suppuration during whole life; foul discharge for years; polypus in meatus hiding membrane; no adenoids.

At operation: Very large antro-mastoid cavity, filled with granulations; polypus removed from meatus; large perforation at the back of the membrane. Granulations removed through perforation which afterwards healed in three weeks. Hearing before operation watch on contact; after operation 12 feet. Hearing equal in both ears. A remarkable result.

CASE 3.—A patient two and a half years old. Suppuration three months. Admitted with swelling behind the ear and a high temperature. Adenoids removed. Swelling and temperature abated after one week in hospital. Discharged but readmitted at the end of another week with displacement of pinna and usual acute mastoid symptoms. Temperature 100·8 F.

At operation: Large antral cavity full of pus and granulations; sinus leading to it through the cortex; perforation at the back of the membrana tympani; granulations seen in the tympanum but not removed. Perforation healed in less than one month; much improved in appearance since operation. Entire drum still visible. Hearing before operation and since, not satisfactorily ascertained, but hears whisper well at a distance in both ears, apparently equally, but watch tests are unreliable for both ears on account of extreme youth.

CASE 4.—The patient was 29 years of age. Totally deaf in the right ear; six months' suppuration in the left ear. Hearing steadily getting worse; could only hear a loud shout in the affected ear; labyrinth defective; watch not heard on contact; most of the membrane gone; fœtid discharge; much pain.

At operation: Dura mater of lateral sinus exposed close to the bony meatus, over half an inch forward of the usual position; the small antrum extended beneath the front of the lateral sinus. As to the present condition there is now no external discharge, all mucus being removed by the Eustachian tube; perforation probably too large to have healed so soon after the operation, but has contracted. Hearing before operation required a loud shout in the ear; at present the patient hears a whisper at six feet and conversation anywhere in a room. This patient was so deaf that she lost her employment and though not a favourable case for any operation an attempt was made to improve the hearing, which has succeeded. This perforation is rapidly diminishing in size.

CASE 5.—A patient aged 14 years. Nine years' suppuration after scarlet fever; most of the tense membrane gone. Adenoids removed for ear symptoms in April. On May 17th pain and tenderness over the mastoid. Admitted to hospital; fomented; improved; discharged. Returned June 7th with tenderness and swelling over the mastoid and high temperature; granulations seen in the perforation.

At operation: Antrum deep and small, the deeper part extending beneath a very forward lateral sinus. The perforation is not yet healed on account of its large size but the drainage goes by the Eustachian tube. Hearing before the operation watch one inch, after operation eight inches; the other ear 24 inches. This perforation is steadily diminishing in size.

CASE 6.—A patient aged 40 years. Totally deaf in the right ear; six months' suppuration in the left ear. Hearing getting steadily worse and now useless. Tiny meatus; nothing to be seen through it; carious bone felt in the tympanum; labyrinth defective; watch not heard on contact. Operation performed solely with a hope of improving the hearing; whole of the mastoid process diseased and removed; membrane observed to be of only about half the usual area. The organ of hearing in this patient is probably congenitally small. Eustachian tube is still usually found to be obstructed but can be cleared with the air bag; this prevents the perforation, which is not large, from healing. Hearing before operation needed a shout close to the ear; after operation the patient could hear conversation anywhere in the room and it was with the hope of this satisfactory improvement that the operation was performed. The disease was not acute.

CASE 7.—The patient was 13 years old. Suppuration ever since infancy. Admitted with unusually acute symptoms; displacement of ear; great pain; hard granulations entirely filling the meatus.

At operation: Enormous cavity in the mastoid process extending to the tip with pus under considerable pressure. The cavity appeared to have previously communicated with the meatus near the membrane and with the tympanum through the aditus; both routes were now blocked which accounted for the compression of the contents of the cavity. The posterior wall and the posterior part of the inner wall of the cavity pulsated freely, indicating extensive exposure of the middle and posterior fossæ of the skull. A temporary gutta-percha tissue drain was used in the lower end of the post-auricular incision for 48 hours in addition to the large drainage tube through the cartilaginous meatus. The perforation was healed in less than one month. Hearing before operation, watch on contact; afterwards seven feet; the other ear five feet. This case shows that after even prolonged suppuration the middle ear may not be in such a damaged condition as to be incapable of complete recovery.

CASE 8.—The patient was 12 years old. Suppuration several years. Admitted with an acute attack; pain, occipital and mastoid; view of the membrane obstructed by granulations.

At operation: Pus found beneath the pericranium; the mastoid disease was continuous from the antrum to the tip of the mastoid process and this space was filled with granulations and pus; the lateral sinus was freely exposed in the abscess. A temporary gutta-percha tissue drain was used in the lower end of the wound in addition to the drainage tube in the meatus. The perforation was healed 12 days after operation. Hearing before the operation, watch one inch; since operation, eight inches and is steadily improving.

CASE 9.—The patient was 49 years of age. Six months' suppuration. Admitted with all the usual acute symptoms; labyrinth involved.

At operation: The cortex was discovered to be undermined before removal. A large cavity was opened extending from the antrum to the tip of the mastoid process with the lateral sinus lying bathed in pus. A polypus in the meatus was removed but a round granulation which appeared to fit into the large perforation at the back was left to see what would result. In three or four days it had adhered to the edge of the perforation and when the patient inflated the ear the air came out through the aditus and not by the perforation; the granulation was then separated from the edge of the perforation with a probe and the patient was again told to blow. The granulation on this occasion entered the perforation, acted as a ball-valve and again obstructed the passage of air; it was left thus and has adhered and blocks this large perforation. Hearing before the operation required a loud shout and the watch was not heard on contact; since the operation half an inch; with the other ear only two and a half inches. In the best ear there is a gouty catarrh and the labyrinth also is not in good order. The patient is a hammerman and the loud ringing of the anvil may have injured the labyrinth, for it is defective on both sides and therefore deafness would surely have resulted if the radical operation had been done, for only if the labyrinthine trouble is of a transient nature is any other result probable.

CASE 10.—The patient was 29 years of age. This case should be added, although the operation was performed in 1902 in a somewhat different way, the paste for bony meatus being removed right down to the perforation, which was situated posteriorly, was crescentic, extended to the tympanic ring, upwards into Shrapnell's membrane, and was a third of an inch long. It looked as though it never would heal, for more than a quarter of the membrane appeared to have been destroyed. There had been six months' suppuration and there was a fœtid rhinitis. The discharge from the ear was very foul; there were abundant granulations and the patient was admitted with acute symptoms.

Now the membrane is intact, there is little but irregularity of the new portion to show the great extent of the disease that previously existed and, further, the patient can hear the watch at a distance of six feet. It was impossible to avoid the conviction that if the grave and extensive disease of the tympanum which this patient exhibited before operation was not incompatible with the complete recovery which followed, then there are grounds for assuming that there can be but few pathological conditions of that cavity which are. This patient's ear on account of the large size of the perforation of the membrane was a long time healing; there was, however, no otorrhœa after the operation while the aperture was closing, for the efficiency of the Eustachian tube was fully restored. It was an encouraging fact that this enormous perforation should heal at all, and that this patient completely recovered from the disease proves that elimination of the antrum was all that was required. She now has an intact hearing apparatus of excellent quality and it is probable that one or more of the only remaining three out of ten patients with, as yet, unhealed perforation will recover. (The two patients in whom the Eustachian tube is clear already show considerable reduction in the size of the tympanic perforation.) This patient (Case 10), who was exhibited at the Otological Society two and a half years ago, has been of much interest and the encouragement derived from her recovery has had much to do with the persistence of this investigation over a period of four years.

The opinion can safely be expressed that all the cases recorded above were in such a condition and had such a history as would, with the experience hitherto available, suggest to the surgeon the necessity of the radical operation, yet the results of the methods which were adopted seem to prove that in the majority, if not in all of them, the radical operation would not have resulted so favourably.

Cases 4 and 6, both delicate women with defective sight, though their tympanic perforations are not yet healed, one because it is so large and the necessary time for extensive healing has not elapsed since the operation and the other because the Eustachian tube is obstructed, are in a far better condition as to hearing and their lives are just as safe as they would be after a radical operation. The labyrinth in each of them is defective and when this is the case half a drum is better than none if the incudo-stapedial connexion is intact, for it keeps the stapes moveable and in proper position, and this will react beneficially on the round window and on the condition of the whole labyrinth.

In Cases 5, 7, and 8 the patients were admitted to the Throat Hospital, Golden-square, on account of acute symptoms, by order of my colleagues Dr. H. Lambert Lack and Mr. Charles A. Parker, who kindly handed them over to my care. My thanks are also due to our house surgeon, Dr. H. F. Shorney, for the care which he displayed in recording the notes of these cases.

The improvement in the hearing of all these patients should not be surprising when it is recognised that no part of the hearing apparatus was removed or injured at the operation and that the source of the discharges which were the cause of the tympanic irritation and deafness was taken away. The list includes all the patients who were operated upon in this manner. They may or may not show better results than are to be expected in the future. A confident opinion may be expressed that they will be improved upon but, such as they are, they are presented for consideration. These ten persons have not only been relieved of the dangers of this disease but this end has been attained without the sacrifice of the hearing of one of them and in the short period that has elapsed since the operation the perforations of the membranes of seven out of ten patients have healed.

Remarks.—What is the procedure described above? It is an adaptation to this part where the anatomical difficulties are so great of those surgical principles which are successful elsewhere. It is also a stage in the process of differentiating the larger number of patients who do not appear to require the radical operation from the smaller number who do. For what surgeon would subject a patient to a radical operation if there were a probability of a better result by any other measure. Unfortunately, hearing of such fine quality as that exhibited by several of the ten patients referred to above has never been observed to follow the radical operation. The practice of new methods usually results in increased knowledge and the proceedings above related are no exception to this rule, for they have resulted in recoveries which point to the necessity of a more searching examination of patients before proceeding to the radical measure, even though that examination may only be completed during the progress of an operation, when the necessary information should be forthcoming to show whether there is or is not a possibility of saving or restoring the hearing and this examination is urgently demanded on behalf of those persons in whom the other ear is in a condition to indicate a possible or probable failure of function, for though the removal of danger in these cases is a surgeon's first duty the preservation of the power of hearing is the second. Far be it for me to suggest that the radical operation will no longer be needed; it will still be of use for those whose hearing has been entirely destroyed or whose disease has not been found amenable to the treatment herein described which by avoiding the removal of any part essential to hearing permits such prospects of retention of the hearing power as the radical operation, associated as it is with its removal of drum and ossicles, cannot possibly afford. Confronted by the facts and experiences recorded in this communication, the otologist will no longer have the excuse of anxiety concerning the safety of the hearing to induce him to delay interference until that hearing may be destroyed, or even the patient's life in danger in consequence of which an operation may have to be immediately undertaken under such conditions that parts must be sacrificed, or have already been destroyed by the disease, which, if the operation had been performed earlier, might have been retained to the patient's great advantage. (Five of the patients referred to above were operated upon under these unfavourable conditions.) Therefore, surely it will be right in dealing with the antrum to do as the general surgeon does with regard to the appendix—that is, to recommend operation as soon as there is proof that the part is diseased and has become an abiding source of danger,

for by so doing there can be no doubt that every year a great many valuable lives will be saved.

The duration of the suppuration, which before the experience gained during the years of this investigation had been considered of some moment, though observations of a large number of radical operations did not support this view, has not in itself been proved to be of much importance, for of the three cases mentioned above, with as yet unhealed perforation though improved hearing, two of them were cases of short duration, and the third though of longer standing was the result of great damage wrought by an attack of scarlet fever.

On the other hand, the patients in Cases 2 and 7 with a history of eight and 18 years' suppuration respectively, very long periods, are now well, have sound ears, and the best hearing of all (hearing for watch 12 feet and seven feet) and indicate also that duration of the disease alone does not necessarily bring about such changes as are incompatible with complete recovery. The hearing of the two persons (Cases 4 and 6) the duration of whose suppuration was of short standing had steadily got worse, and the watch not being heard on contact also indicated that the labyrinth had suffered along with other parts. Now a radical operation on those patients would probably have made their hearing worse, for the labyrinth must be in fine order for the hearing after the radical operation to be good, and one of these patients had previously undergone a radical operation on the other ear and the hearing on that side was *nil*. Surely these points encourage the opinion that, given the continuity of the ossicular chain, half a drum is better for such persons than none, as they cannot hear by the small fenestræ after the radical operation, the labyrinth is not sufficiently sensitive, and the impressions conveyed by these small windows are not sufficient to stimulate a defective labyrinth. In cases where the acute disease has caused great destruction of bone and the resulting cavity in the mastoid process is large, healing may be hastened by skin grafting on Thiersch's plan through the meatus, for the cavity can be thoroughly sterilised and grafting made effective as soon as the leakage of mucus has been arrested by the closure of the perforation and aditus.

The appearance of the thickened and granular tympanic mucous membrane need cause no alarm; it has a protective purpose and is therefore desirable; it is of the nature of an inflammatory zone around an abscess, a strengthening of defensive works occupied by defensive cells; and are not inflammatory conditions analogous to these, seen everywhere in the body where there is suppurative disease and therefore repair required? If this rational view of this disease be taken there need be no surprise at the rapid healing which followed operation in several of the cases quoted above; the tissues were vascular and ready to proceed with repair as soon as the cause of the persistence of disease was removed. As remarked above, it appeared to be reasonable to expect the tympanum to recover as soon as the cause of irritation was removed.

The presence of cerebral or extradural abscess, lateral sinus thrombosis, and the treatment which these conditions entail are no bar to the performance of this operation in its essential parts, and the complications which for their adequate treatment demand removal of tympanic contents, such as labyrinthine suppuration, are rarely present, and when they are the hearing will usually be found to have been already destroyed by that disease. Finally, it may be claimed that this plan eliminates disease and danger as effectually as a radical operation without destroying the power of hearing.

The results as far as appearance within the meatus is concerned would naturally be better in the persons who are subjected to operation before extensive destruction of bone has taken place as a result of acute disease; though with regard to the power of hearing there is no appreciable difference this tends to show that the acute disease was entirely behind the tympanum and is in favour of the early contention that the antrum was the key of the position. The hope may again be expressed that the experience gained by a study of these operations may induce other otologists not to allow suppuration in the ears to go on until the hearing is jeopardised nor if urgent symptoms arise—as in so many of the cases recorded above—to recommend the radical operation, for thereby hearing may be sacrificed, while from the foregoing it will be seen that an operation is now available which can be expected to improve the hearing in most persons and make it worse in none, and at the same time remove that risk of acute disease, to prevent which the radical operation, in spite of its risk to the hearing, is so frequently performed.

It might have been unwise to draw important conclusions from so small a number as ten operations were it not for the fact that they were so far above average severity that no other series of that number is likely to exhibit less favourable results and for the fact that the preliminary remarks and the whole design of the investigation evinced an expectation of such results.

In these concluding remarks not a tithe of the important matters bearing on this subject have been touched upon which have been recorded with a view of discussion, but if enough has been said to induce other otologists to try this method of operation it is improbable that their experiences will materially differ from those given above.

Though the preliminary remarks will have shown that most of these results were foreseen, this investigation has been interesting from the very beginning. When, however, a stage was reached in which the operations were performed new phases developed which required consideration and management and it became quite engrossing. At last there was the satisfaction of knowing that it would certainly result in information which could be relied upon to place the treatment of this terrible disease on a safer and more satisfactory foundation.

The after-treatment of these cases being of such importance, and the information those duties must necessarily convey being of such value, I was constrained to undertake them myself and increased thereby the arduous nature of the task, and it is difficult even now to estimate fully the importance of this question during the short time that has elapsed since the facts were discovered

It is mainly to the unequalled opportunities afforded at the hospital to which I have the honour to belong that this work has so rapidly resulted in definite and valuable conclusions.

ON A FORM OF AMBLYOPIA IN YOUNG CHILDREN CONSEQUENT UPON INHERITED SYPHILIS.

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AMONG the more difficult cases that fall under the notice of the ophthalmic surgeon are those of amblyopia in young children. In addition to the defective history usually forthcoming from parents of the hospital class there are the innate difficulties of ophthalmoscopic examination in children of tender age, who so far from aiding our investigation, do everything they can to impede it. Then there is the uncertainty that must always surround our estimate of the degree of sight possessed by any given baby. In short, the diagnosis of few disorders calls for more patience, knowledge, and skill on the part of the surgeon than that of defective sight in babies.

The most important groups of amaurosis at present recognised in infants are four in number: first, amaurotic family idiocy (Tay and Sachs); secondly, acute cerebral amaurosis of infancy (Gay); thirdly, post-convulsive amaurosis (Ashby and Stephenson); and, last, but not least, post-meningitic amaurosis or amblyopia due to organic changes in the optic papilla and (presumably) in the optic nerve also. In addition to the foregoing, some experience of the eye diseases of children has rendered me familiar with a fifth group of cases where a form of blindness, partial or complete, is directly attributable to the action of the syphilitic virus. The condition is due immediately to opacities in the vitreous humour and remotely to a specific inflammation of the choroid or of the retina or of both those structures. The condition, of course, must be known to many others besides myself. Indeed, "specific hyalitis" has been mentioned by Mr. Jonathan Hutchinson in his memoir "On Certain Diseases of the Eye and Ear Consequent on Inherited Syphilis" (1863), and by Mr. Edward Nettleship in a communication upon Some Forms of Congenital and

Infantile Amblyopia, published in the Royal London Ophthalmic Hospital Reports for the year 1887. At the same time I may be pardoned for publishing reports of some of my own cases since, in my experience, the condition is not an altogether uncommon cause of defective sight in infants and is one that should be diagnosed early in order that specific remedies may be given a fair chance of curing the disorder. Brief details of my cases follow.

CASE 1. *Amblyopia in an infant, aged seven months, who died 12 days after she was first seen, presumably from congenital syphilis.*—A. B. came under my care at the Evelina Hospital on July 19th, 1901, on account of defective sight. The mother did not know whether the baby had ever seen well but she was certain that during the last month sight had become worse. A. was the third child, and it was significant to my mind that the second child, now aged 18 months, had suffered in much the same way and was now recovering her sight. Upon examination A. B. was found to "snuffle," to be wasted, and to present a condyloma in the right groin. Her eye rolled about aimlessly and she took not the least notice of a bright object, as a gold watch. The pupils (as in most infants) responded imperfectly to atropine and no view of the details of the fundus could be obtained with the ophthalmoscope. A week later, however, opacities, especially in the anterior part of the vitreous humour, and the optic discs could be dimly recognised. The baby died on July 31st, 1901.

CASE 2. *Amblyopia in a syphilitic infant, aged 11 months; considerable improvement under specific treatment.*—C. D. was admitted on March 7th, 1902, with the history that he had never seen well. Although born at term yet he was a small baby. He "snuffled" for several months and did not thrive. He was bottle-fed. The mother had been married 13 years; she had had no miscarriages. On examination I found a tolerably well-nourished baby the bridge of whose nose was markedly sunken ("saddle-bridge"). He followed the flash of the ophthalmoscopic mirror quickly and correctly. The pupils were equal but not responsive to light. The eyes (examined under chloroform) contained vitreous opacities, so numerous as to obscure all deeper details. Under treatment with mercury and chalk, one grain twice a day, the baby showed much improvement. On April 25th he was stated by his mother "to notice everything." His pupils were then responsive to light and the vitreous opacities were less marked. He had put on flesh and become good-tempered.

CASE 3. *Amblyopia in a wasted infant, aged three months, associated with ptosis and spasmodic contraction of the muscles of one eye.*—E. F., a wasted "snuffling" baby, aged three months, was taken to hospital on Jan. 26th, 1904, because she was said "to take no notice of anything." She was the sixth member of the family, three members of which had died from "wasting." There was spasmodic ptosis of the left upper lid, with occasional deviation of the left eye downwards and outwards. The eyes were most difficult to examine but the right optic disc—the only one of which a good view could be obtained—was greyish-white and opacities were present in the vitreous humour of each eye.

CASE 4. *Amblyopia of fluctuating type in an infant, aged two months, who had suffered from ophthalmia neonatorum; considerable improvement under mercurial treatment.*—G. H. was taken to hospital on Jan. 9th, 1906, with the statement that both eyes had become inflamed on the second day after birth and that since then the baby had taken little notice of things about him. On examination there was discharge from the conjunctiva, the condition of which was tolerably good. A small central macula was present on the left cornea. The pupils reacted but slightly to light. The results of the mirror test were inconclusive, the baby now taking notice of the ophthalmoscopic flash and again remaining impervious to the light stimulus. No details of the fundus could be recognised, owing to fine vitreous opacities, lying chiefly in the anterior part of the humour. The baby was treated with mercury and chalk (one grain three times a day) from Jan. 29th to March 24th, and a note made upon the latter date states that the mirror flash was well followed by the baby. The evidence of congenital syphilis in this case was not so conclusive as one could have wished but the child "snuffled" and was wasted. It would be unsafe to lay any great stress upon the craniotabes that was present since there is still a difference of opinion among competent authorities as to the precise significance of that sign.

CASE 5. *Dull and fluctuating sight, due to vitreous opacities and choroiditis, in a child, aged two years, who had suffered from symptoms of congenital syphilis; improvement under prolonged treatment by mercury.*—I. K. was taken to hospital on August 22nd, 1905, on account of her sight which was stated always to have been defective. It had been noticed that her sight was worse in the morning than at other times. The eyes had never been inflamed. She was the fifth child in the family and there had been no still-births or miscarriages. When the baby was about three months old she wasted, began to look old, had an eruption on her skin, and presented bleeding ulcerations upon her lips and buttocks. She recovered after about three months' treatment by a medical man. Upon examination the child was found to walk and to talk. Her head was rather small. Her eyes were steady and her pupils were equal and responsive to light. She saw and followed with her eyes the flash of the ophthalmoscopic mirror in the darkened room. The right eye, as tested by the position of corneal reflex, had a slight convergent squint. There were fine vitreous opacities in each eye, concealing to some extent the ophthalmoscopic view of the fundus. But on careful examination with concentrated light faint but extensive choroidal changes could be recognised. Pigmentation, as usual in young children, was not a marked feature of the choroiditis. Under six months' treatment by mercury with chalk (from two to five grains per diem) the vitreous opacities disappeared and the sight became much sharper. The choroiditic changes, moreover, were seemingly brought to a standstill.

CASE 6. *Amblyopia in a young child whose father admitted syphilis; nervous symptoms and loss of sight, the latter due to vitreous opacities, disseminated areolar choroiditis, and choroiditic atrophy of the optic disc; partial recovery under mercurial treatment.*—L. M., aged two and a half years, was taken to the Evelina Hospital on Nov. 14th, 1905, with the following history. The child had no definite illness until seven weeks previously, when he complained of pains in the chest, went "off his feed," began to waste, and eventually lost consciousness for a couple of days. Upon recovery it was found that he had lost the use of his left hand and leg, and about a week later that he had lost his sight which had previously been good. The father, who had been married 13 or 14 years, had suffered from syphilis seven or eight years prior to marriage. The first child, a boy, had died at six years from diphtheria; next came a miscarriage, and, lastly, the patient was born. Upon examination the child took no notice of a light and the left eye tended to diverge. The vitreous was cloudy, the optic discs were badly defined, and there were numerous patches of choroiditis in each fundus. Mercury with chalk (from three to five grains per diem) had acted so well that on April 10th, 1906, that is, after about seven months' treatment, the child noticed the mirror flash, although not always readily. The fundi showed slightly pigmented areas of choroiditis; the discs were "on the pale side"; but no vitreous opacities could be recognised.

Remarks.—The condition to which attention is drawn in this paper obviously represents a secondary manifestation of congenital syphilis (syphilis hereditaria præcox). It corresponds with the retinitis, choroiditis, or retino-choroiditis sometimes observed in acquired syphilis from, say, six months to two years after the initial sclerosis, and just as those diseases are often complicated with vitreous opacities so is the affection under notice. In both conditions, congenital and acquired, the eyes may be involved to an unequal degree but it is most unusual for one eye alone to be affected. My point about infantile amblyopia is that in babies "hyalitis" forms the leading ophthalmoscopic feature of the case, while the underlying choroiditic or retinitic lesions may be relatively insignificant or may be altogether hidden by the cloudy vitreous humour.

In my opinion, in babies a cloudy vitreous humour means one thing alone—namely, the existence of congenital syphilis. The diagnosis of the vitreous opacities, however, may be simple or the reverse. Fluctuation in sight, however, is suggestive of their existence. It is seldom, according to my experience, that one sees actual "floaters" with the ophthalmoscope. The condition usually takes the form of tiny dust-like opacities, the ophthalmoscopic effect of which is to veil or actually to conceal the details of the fundus. The latter may be seen for the first time only after the vitreous opacities have been more or less cleared by lapse of time or by the administration of mercurials.

In some cases (Nos. 2, 4, 5, and 6) the hazy vitreous clears tolerably quickly under the influence of mercury. The fundus may then show few, if any, changes of a striking

nature. This particular sequence appears to me to represent a primary syphilitic retinitis (or possibly a cyclitis), such as may occur in the acquired disease from six to 18 months after the chancre. Of the other cases some are strictly analogous to the much commoner disseminated choroiditis seen from one to three years after the initial sclerosis. In such patients (Case 6) the optic papilla may acquire the dirty yellowish-white hue to which the name of "choroiditic atrophy" has been applied by Sir William Gowers.

It is an interesting and remarkable feature that none of my cases of infantile amblyopia have shown any evidences, past or present, of iritis. Yet that disease was recognised and described by William Lawrence in 1830[1] in a child, aged 16 months, whose mother was also under treatment for constitutional syphilis. Only one of the baby's eyes was affected and the inflammatory symptoms were mild. Lawrence speaks of a second case associated with wasting and eruptions and terminating in blindness.[2] William Mackenzie spoke of iritis as "not infrequently the consequence of congenital syphilis."[3] Mr. Jonathan Hutchinson, who described a series of 28 cases amongst infants aged from six weeks to 16 months, characterised this form of iritis as "amongst the rarest of the symptoms of hereditary syphilis."[4] The disease, indeed, must be exceedingly rare, for I cannot recall in my own work having recognised a single case. I agree with Dr. George Carpenter who, in his remarkable monograph on "Syphilis of Children in Everyday Practice" (1901, p. 83), states that he has never met with a case, although as a matter of routine he has examined the eyes of hundreds of syphilitic infants, and quotes Henoch also as never having seen a case. The experience of those writers appears to be borne out by that of other workers in the field of children's diseases.

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THE AURICULO-VENTRICULAR BUNDLE OF THE HUMAN HEART.

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IN a letter contributed to THE LANCET[1] one of us described the initial difficulty in finding and displaying the muscular bundle which unites the auricles and ventricles and which is now regarded as the sole pathway for the passage of the auricular wave of contraction to the ventricles. Since that letter was written we have examined over 130 human hearts and although we failed to find the bundle in some of the earlier specimens we are now confident that our failure was due to our ignorance of certain variations which may occur in its position and relationships. We are now convinced that it is an absolutely constant structure and in the properly prepared heart is big enough to be found and dissected out by knife and forceps alone; its finer structure and exact connexions require the preparation of serial microscopic sections. Through the kindness of Mr. Frank Beddard, F.R.S., prosector to the Zoological Society, and of Principal J. Y. Mackay of University College, Dundee, we have had opportunities of examining the hearts of nearly every mammalian order; in all the auriculo-ventricular bundle is present, in all it has the same position, the same connexions and distribution. We have found it in the heart of the young human fœtus in the position and form described by W. His, jun., so long ago as 1893. In seven out of nine malformed human hearts we were able to dissect out the bundle by means of knife and forceps. In a case of heart-block, described by Dr. John Hay,[2] we found that the bundle was partially obliterated at the point at which it perforates the central fibrous body of the heart. In another case of heart-block (Dr. Otto F. F. Grünbaum's) we found the bundle involved within a gumma of the septum.

Much of our pathological material we owe to Dr. J. Mackenzie of Burnley; in two of the hearts sent by him, in which there was an irregularity in the auriculo-ventricular rhythm, we found the connecting muscular bundle largely replaced by fibrous tissue. In short, all the evidence that we have been able to collect from human and comparative anatomy, from embryology, physiology, and pathology, substantiates the theory that the muscular bundle, which perforates the central fibrous body of the heart and connects together its auricular and ventricular parts, is the sole path by which the auricular wave of contraction passes to, and is distributed within, the ventricles. We take this opportunity of clearly stating that although some of our observations are new our work is in the main but a verification of the accurate and complete monograph published recently by Tawara,[3] a Japanese working in the laboratory of Professor Aschoff of Marburg.

The development of our knowledge concerning the auriculo-ventricular bundle (which, for short, may be named the *a. v.* bundle) has been one of intermittent progress. Its history may be said to begin in 1883 when Gaskell[4] proved that the auricular impulse spread to the ventricles by passing over the muscular connexion which exists between these two parts of the heart. Gaskell's work was not regarded as inapplicable to the mammalian heart until 1893; in that year Dr. A. F. Stanley Kent[5] published several papers showing that Gaskell's work may also be applied to the mammalian heart, for in it he found, contrary to all previous observations, that there is a muscular continuity between the auricular and ventricular segments of the heart. The muscular connexion, he said, was of two kinds: 1. By a direct continuity of the auricular and ventricular musculature at certain points; one of the points he specified was at the junction of the interauricular and interventricular septa of the heart; it is this point of muscular continuity which is now spoken of as the auriculo-ventricular bundle of His. 2. He described an intermediate continuity by means of a network of primitive fusiform muscular fibres which are imbedded in the fibrous tissue of the auriculo-ventricular rings of the heart. The second or intermediate muscular union described by Kent we have failed to find in the human heart.

In the same year as Kent applied Gaskell's conclusions to the mammalian heart in England W. His,[6] jun., was attacking the problem in Germany in quite another way. He studied the action of the embryonic heart and found that the auricular impulse passed to the ventricle before nerves had reached or were developed within the heart, and concluded that Gaskell's observation was true—the auricular impulses pass to the ventricle by a muscular connexion. He concluded therefore that it was an error to suppose that the muscular continuity between auricles and ventricles was completely broken during development in the hearts of birds and mammals, and that somewhere a strand of continuity must remain. He found that the muscular continuity disappeared everywhere except at one point—viz., at the junction of the auricular and ventricular septa, the point at which Kent had observed a connexion. Although the work of His, jun., was published some months later than Kent's, yet it must be owned that the German formed the more definite conception of his discovery. In the first place he concluded that the *a. v.* bundle was the sole path for the conduction of the auricular impulse to the ventricle; (2) he put his discovery to the proof of experiment and showed that section of the bundle produced discordance in the contraction of auricle and ventricle; and (3) he looked for and found and described the *a. v.* bundle in the heart of man. We have dealt with this small matter at some length because owing to the question of priority we in this country might feel inclined to replace the name of His by that of Kent.

[1] A Treatise on the Venereal Diseases of the Eye, p. 306. An earlier writer, Thomas Howson, described a case of mild iritis in a boy, six years of age, who had suffered from infantile syphilis, and who presented "painful enlargements in the centre of both tibiæ." (Observations on the Ophthalmia Accompanying the Secondary Forms of Lues Venerea, 1824, p. 107.) The symptoms yielded entirely to mercurial treatment.

[2] Loc. cit., p. 164, and A Treatise on the Diseases of the Eye, 1844, p. 426.

[3] Practical Treatise on the Diseases of the Eye, 1854, p. 546.

[4] Syphilis, London, 1889, p. 239.

[1] THE LANCET, March 3rd, 1906, p. 623.

[2] THE LANCET, Jan. 20th, 1906, p. 139.

[3] S. Tawara: Das Reizleitungssystem des Säugetierherzens, pp. 198, 10 plates. (Gustav Fischer, Jena, 1906.)

[4] Gaskell: Journal of Physiology, 1883, vol. iv., p. 43.

[5] Stanley Kent: Ibid., 1893, vol. xiv., p. 43.

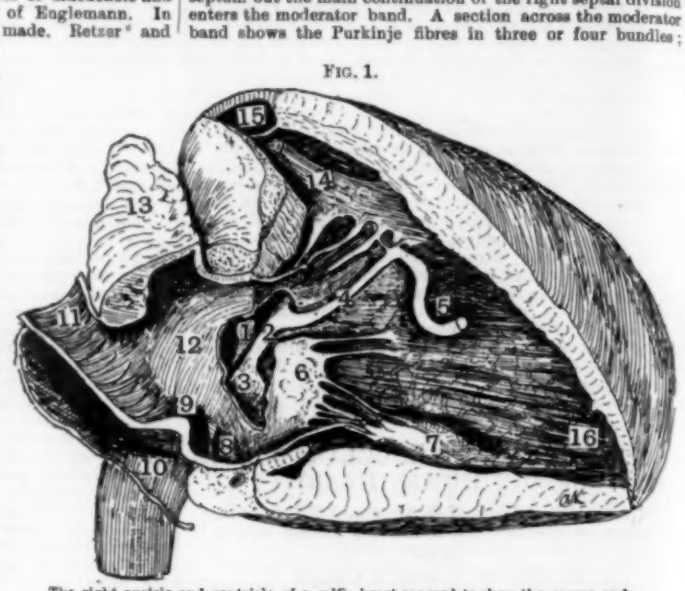
[6] W. His, jun.: Arbeiten aus der Medicinischen Klinik zu Leipzig, 1893.

We believe that neither this bundle nor any other structure in the human body requires a personal name for its proper designation; it is only fair, if we assign the priority to the Englishman, that we should give the credit of the fuller discovery to the German.

Between the work of Gaskell and that of Kent and of His there intervened a resting period of about ten years. Another period of ten years passed before the matter was again actively pursued. Writing about a case of irregularity in the rhythm of auricles and ventricles in 1899 His[7] suggested that the lesion in such cases would be found to affect the *a. v.* bundle. Interest in the matter was undoubtedly stimulated by the exact clinical methods of Mackenzie and Wenckebach and by the experiments of Englemann. In 1904 a number of investigations were made. Retzer[8] and Braeunig[9] again verified its existence and investigated the nature of its composition. Max Humblet,[10] Hering[11] of Prague, and Erlanger[12] of Baltimore (working probably at the suggestion of Osler) set to work experimentally and confirmed the discovery of His—that the *a. v.* bundle was the sole pathway for auricular impulses across the auriculo-ventricular junction; if the bundle was partially cut or slightly compressed the impulse was delayed; if completely cut or tightly compressed the impulse was arrested or blocked, leaving the auricles and ventricles to go on beating independently. But the real advance at this time came by the application of anatomical methods. It is Tawara's merit to have shown that the *a. v.* bundle described by His and seen by Kent is only the commencement of a great system which distributes the auricular impulse throughout the substance of the two ventricles. Tawara discovered that the bundle descended on the interventricular septum and was continued by ramifications to all parts of the ventricular walls; the ramifications of this system he found to be made up of Purkinje fibres, the presence of which within the heart had never been explained. In short, Tawara formulated the theory that the Purkinje system of fibres is for the conduction and distribution of the auricular impulse within the ventricles. The musculi papillares especially receive an early and liberal supply from the main divisions of the *a. v.* bundle.

The *a. v.* system of fibres has the same type of arrangement and distribution in the hearts of all mammals, but in none is this system so clearly marked as in the heart of the calf. What is seen obscurely in the human heart can be seen there as in a diagram. In Fig. 1 the right chambers of the calf's heart have been laid open; the drawing is made from a heart prepared by the Kaiserling method, by far the best we know for a naked-eye examination of this system. The cartilage within the central fibrous body of the calf's heart is shown; the endocardium of the septal wall of the right auricle and the underlying muscular fibres have been removed from the area between the cartilage and the orifice of the coronary sinus to expose an outer or superficial layer of muscle fibres belonging to the auricular canal. The fibres as they reach the central cartilage terminate in a plexus of fibres. From this plexus or network of muscular fibres commences the auriculo-ventricular bundle. The muscle fibres of the bundle and of the plexus are pale red in colour—paler, much paler, than the surrounding musculature. The bundle passes along a groove, almost a canal, in the cartilage; the canal is completed by the fibrous tissue to which the base of the septal cusp of the tricuspid valve is attached. On issuing from the central cartilage the bundle at once pierces the interventricular septum, apparently burying itself in the musculature. In the figure the bundle has been exposed by removing the overlying musculature. After a short course (one centimetre) within the upper part of the interventricular septum the *a. v.* bundle divides into right and left septal divisions (see Fig. 1). The right septal division passes forwards on the septal wall of the right ventricle, almost superficial in position, until it reaches the point at which the moderator band is attached to the septum. There twigs are given off to the musculature of the septum but the main continuation of the right septal division enters the moderator band. A section across the moderator band shows the Purkinje fibres in three or four bundles;

FIG. 1.



The right auricle and ventricle of a calf's heart exposed to show the course and connexions of the auriculo-ventricular bundle. 1. Central cartilage exposed by dissection. 2. The main bundle. 3. Auricular fibres from which the main bundle arises. 4. Right septal division. 5. Moderator band. 6. Septal cusp of the tricuspid; the upper part of this cusp and the adjacent part of the infundibular cusp have been removed. 7. Posterior group of the musculi papillares. 8. Orifice of the coronary sinus. 9. So-called "tubercle of Lower" above the orifice of the inferior vena cava (10). 11. Orifice of the superior vena cava. 12. Septal wall of the right auricle. 13. Appendix of the right auricle. 14. Septal wall of the infundibulum. 15. Beginning of the pulmonary artery. 16. Apex of the right ventricle.

these bundles are isolated from the rest of the musculature of the moderator band by well-developed connective-tissue sheaths. Through the moderator band they reach the anterior group of musculi papillares and lateral wall of the ventricle; from there extensions to the other musculi papillares are very apparent. Beneath the endocardium a fine network of Purkinje fibres can be seen throughout the ventricle.

In Fig. 1 the bifurcation of the main bundle into right and left septal divisions is shown; in Fig. 2 is depicted the distribution of the left septal division within the left ventricle of the calf's heart. The branch appears on the septal wall of the ventricle about two centimetres below the aortic orifice; just below the aortic orifice the bundle is buried beneath a thick layer of muscle (cut through in Fig. 2 to expose the bundle). This covering stratum of musculature (sub-aortic, it may be termed) is of interest, for, as will be subsequently shown, 25 per cent. of human hearts show a remnant of it. Passing down on the septal wall the left bundle branches into two or more parts, the main part descending towards the apex of the heart, but before reaching that point most of its fibres enter two or three moderator bands (see Fig. 2) by which they pass to the musculi papillares and marginal wall of the left ventricle.

It was undoubtedly a study of the calf's and of the sheep's heart that led Tawara to formulate the theory that the system of fibres just described was a conducting, not a contracting, system. Its root lies in the annular and septal fibres of the right auricle; the trunk is buried in the interventricular septum; its branches and twigs are distributed to all parts

[7] W. His, jun.: Wiener Medicinische Blätter, No. 44, 1894; Centralblatt für Physiologie, No. ix., p. 469.

[8] Retzer: Archiv für Anatomie und Physiologie (Anatomische Abtheilung), 1904, p. 1.

[9] Braeunig: Ibid. (Physiological Supplement), 1904, p. 1.

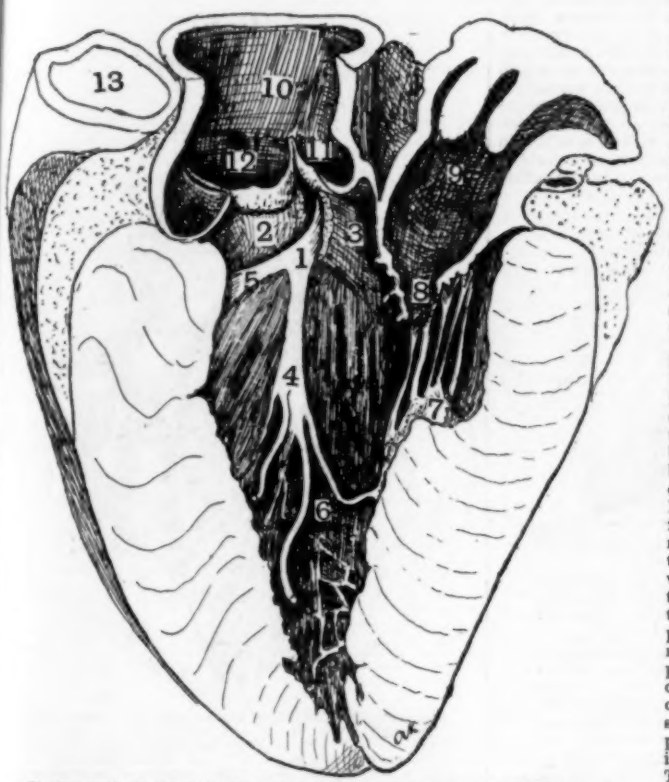
[10] Humblet: Archives Internationales de Physiologie, vol. i., p. 278.

[11] Hering: Pflüger's Archiv, vol. cviii., p. 267.

[12] Erlanger: Journal of Experimental Medicine, vol. viii., p. 8.

of the heart; the muscle fibres which make up the ramifications of this system (not the main bundle) are of the peculiar Purkinje type; these fibres, until they reach their terminations and join the ordinary musculature, are isolated by special fibrous sheaths. Further, when these other circumstances are taken into consideration—(1) that the systole of the ventricles is not a peristaltic contraction spreading from auricular to aortic orifices but a coördinated simultaneous contraction of the entire ventricular part of the heart; (2) that physiologists have postulated the presence of a muscular connexion between auricles and ventricles for the transmission of the auricular impulse; and (3) that the Purkinje fibres were until now of unknown significance—when all these circumstances are taken into consideration Tawara's theory commends itself to anatomists and physiologists alike as a satisfactory explanation of the presence and arrangement of the Purkinje system. The early and liberal supply of these fibres to the musculi papillares is a point to be noted. So clearly marked is the conducting system in the heart of the ruminant that one marvels how its presence and its continuity with the *a. v.* bundle have escaped notice until now.

FIG. 2.



The left ventricle of a calf's heart exposed to show the course and distribution of the left septal division of the auriculo-ventricular bundle. 1. Left septal division appearing on the upper part of the septal wall of the left ventricle. 2, 3. The sub-aortic mass of musculature divided to show the passage of the bundle from the right side of the heart. 4, 5. Branches of the left septal division. 6. Free muscular "moderator" bands containing prolongations of the bundle. 7. Septal or mesial group of musculi papillares; this group receives one of the free bundles. 8. Mitral valve. 9. Left auricle. 10. Aorta, laid open. 11. Non-coronary cusp of aortic valve. 12. Right coronary cusp. 13. Pulmonary artery.

In the human heart the Purkinje system is not so clearly differentiated as in the sheep's heart but there can be no doubt, as may be seen from Figs. 3 and 4, that it is present and exactly identical in its position and arrangement. In the heart shown in Fig. 3 both auricles have been removed and the right ventricle has been laid open by the removal of its lateral wall. Part of the coronary sinus (8, Fig. 3) has been left attached to the base of the left ventricle; some of the annular fibres of the right auricle, from which the *a.v.* bundle begins, have also been left; the main bundle is represented, for diagrammatic effect, as a hard narrow white line; it passes forwards within the lower margin of the membranous part of the septum and on the upper margin of the interventricular septum; the inner or mesial part of the septal cusp of the tricuspid valve has been removed to show the bundle in this part of its course; traced backwards the bundle is seen to perforate the central fibrous body of the heart, which in the figure is laid open so as to show the bundle joining with the fibres of the right auricle. As the bundle is traced forwards in the membranous part of the septum it is found to separate, as in the sheep's heart, into a right and left septal division. The typical condition of the right septal division is shown in Fig. 3. It always passes down the septum at the same position—viz., at the junction of the infundibulum and sinus of the right ventricle. It is commonly buried in the musculature of the septum, often in the depth of a furrow of thickened endocardium, and passes directly to the anterior group of musculi papillares—the same destination as in the sheep's heart. In the sheep's heart (Fig. 1) it reached these musculi through the moderator band. The moderator band of the human heart is the wide thick septal trabecula, shown at 5 in Fig. 3, only slightly separated from the rest of the interventricular septum. This great trabecula has exactly the relationships of the moderator band of the sheep's heart; the classical description of a moderator band is applicable to the common type of mammalian heart, such as the sheep's, but certainly does not hold for the human heart.

Turning to the left side of the human heart, the left septal branch of the *a. v.* bundle will be found to be very apparent; it is seen descending as a wide sub-endocardial fillet on the septal wall of the left ventricle (Fig. 4). The membranous part of the septum is shown beneath the non-coronary and right coronary valves of the aorta (14, 13, Fig. 4). As the main *a. v.* bundle passes forwards in the lower margin of the membranous space it gives off a continual stream of fibres which pass downwards in the sub-endothelial tissue of the septum and form the fillet mentioned above. The thread-like part passing from the septum to the mesial or posterior group of musculi papillares (Figs. 4 and 5) is almost constant. These threads may be two or three in number; they contain extensions of the *a. v.* bundle. The main part of the left septal division separates into two, or sometimes three, branches. The anterior of these branches passes [19] to the anterior or lateral group of musculi papillares; the posterior to the posterior or mesial group. These extensions to the musculi papillares often form free or "moderator" bands, as in the heart of the sheep and ox. Besides the branches to the musculi papillares numerous twigs go to the lateral walls of the left ventricle. In the arrangement and distribution of the *a. v.* system there is to be seen a close resemblance between the heart of man and that of the ox.

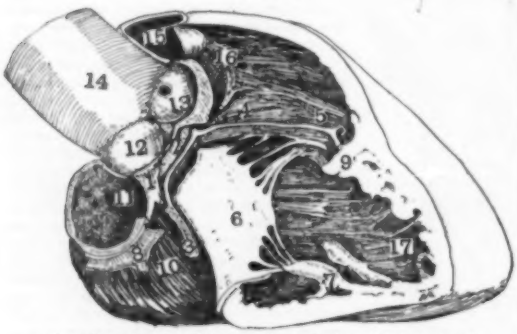
So far we have described in a general manner the course and distribution of the *a. v.* bundle, merely touching on its relationships to other parts of the heart in a cursory manner. When we came to examine microscopically the structure of the region of the heart in which the main bundle is situated,

[19] At the present time there is the utmost confusion as to the nomenclature of the cusps of the aortic valve. If the terms right coronary, left coronary (above which the right and left coronary arteries arise), and non-coronary be used this confusion will be avoided.

especially when we came to deal with pathological conditions, we found it necessary to obtain a more accurate conception of the arrangement and structure of the central part of the heart than can be obtained at present from published works. We propose now to describe the structure, arrangement, and connexions of the bundle more minutely—especially its relationship to two important parts of the heart—viz., the central fibrous body and the pars membranacea septi.

The central fibrous body (see Figs. 3 and 5) with which the bundle is so closely related, and in which, we have found, it is most likely to become broken by disease, is a highly complex structure. First and foremost, it is the chief tendon by which the fibres of the left ventricle are yoked to the mouth of the aorta; when the left ventricle is forcing its load within the aorta it is by this structure that the resistance is mainly borne. Both cusps of the mitral valve are continued into it and the musculi papillares, the anterior group at least, act on it and through it on the aorta. The musculature of the interauricular septum is implanted on it. It is attached to the aorta at the fundus of the non-coronary cusp. (See Fig. 3.) It sends off four processes, two to join the right auriculo-ventricular fibrous ring and two to join the same structure on the left side. It is thus a structure continually subjected to strain, especially in cases where the blood pressure is high from disease of the arteries or of the valves; our experience so far has been to find that it is in arterial disease that the central fibrous body is most likely to become affected and with its cicatrisation the bundle suffers

FIG. 3.

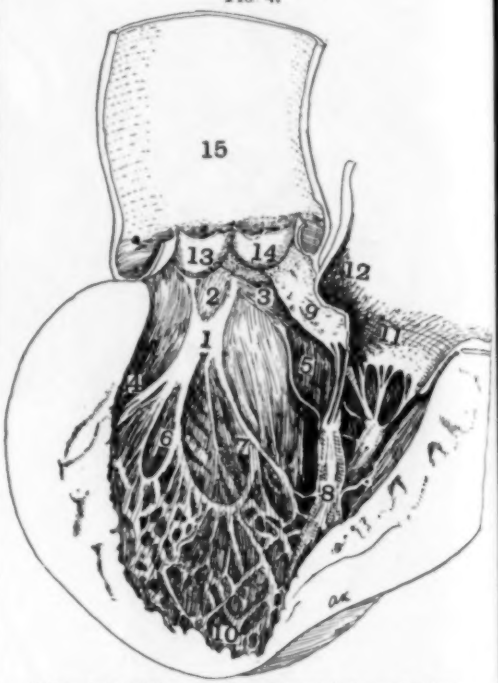


Dissection of a normal human heart to show the course and relationships of the auriculo-ventricular bundle. Both auricles have been removed and the septal wall of the right ventricle is exposed. 1. Central fibrous body of the heart, corresponding to the cartilage of the calf's heart (see Fig. 1). 2. Placed on the pars membranacea septi above the main bundle and below the attachment of the wall of the right auricle to the aorta. 3. Fibres of the right auricle (left *in situ*) from which the bundle takes its origin. 4. Septal wall of the infundibular part of the right ventricle placed above the right septal division of the bundle. 5. Great trabecula on the septal wall; part of it represents the moderator band seen in the typical mammalian heart. 6. Septal cusp of the tricuspid; its upper part has been removed; above the cut edge is seen the upper margin of the interventricular septum, along which the main bundle runs. 7. Posterior musculi papillares. 8. Part of the coronary sinus left *in situ*. 9. Attachment of anterior group of musculi papillares into which a large part of the bundle passes. 10. Base of left ventricle. 11. Mitral valve. 12. Sinus of Valsalva of non-coronary aortic cusp. 13. Sinus of Valsalva of right coronary aortic cusp. 14. Aorta. 15. Beginning of pulmonary artery.

also. Again, the central fibrous body is continuous on the one hand with the substance of the mitral valve and on the other with the septal and infundibular cusps of the tricuspid; in the heart from which Fig. 5 was drawn there were mitral stenosis and ulceration of the valves at the inner fornix of the valves. By direct spread of the inflammatory process the bundle may become affected in the central fibrous body.

The *a. v.* bundle has a most direct and intimate relationship to the central fibrous body. Many of the muscular fibres of the interauricular septum end on it but the fibres that most concern us are the annular fibres of the right auricle—circular fibres surrounding the right auricle just above the base of the septal cusp. These become applied to the central fibrous body which some of them perforate. Before perforation and during perforation they form a fine meshwork; to expose the meshwork in the central body the attachment of the septal valve of the tricuspid to that body has to be cut through. In Fig. 3 the attachment of the septal cusp to the central body has been cut through. The bundle may be then seen as an easily separated strand—from one to two millimetres wide—but very frequently it is so freely mixed with the tissue of the fibrous body that it cannot be isolated; in microscopic sections this is found to be most frequently the case. In the sheep's heart the plexus or network is very pronounced ("Knotten" Tawara names it) but in the human heart its features are not so characteristic. Yet in the human heart the *a. v.* bundle has distinctly a reticulated arrangement of fibres in and near the central fibrous body and it will be convenient to refer to it as the *a. v.* reticulum. In Fig. 5 the central fibrous body has been opened up, the muscular reticulum removed, and the *a. v.* bundle shown in front of the central fibrous body passing forwards in the pars membranacea septi. The central fibrous

FIG. 4.



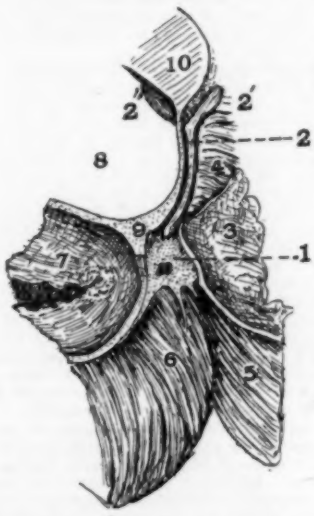
Left ventricle of the normal human heart laid open to show the distribution of the left division of the auriculo-ventricular bundle. 1. Bundle descending on the septal wall of the ventricle. 2. Remnant of sub-aortic musculature (see Fig. 2). 3. Constant bundle of musculature which partly covers fibres of the auriculo-ventricular bundle. 4, 5, 6, 7. Branches of the left division of the bundle. The marginal or anterior group of musculi papillares are supplied from 4. 8. The posterior or mesial musculi papillares receive prolongations from 5 and 7. 9. Anterior cusp of the mitral. 10. Apex of the left ventricle. 11. Left auriculo-ventricular orifice. 12. Left auricle. 13. Right coronary cusp of aorta. 14. Non-coronary cusp of aorta. Below 13, 14, and above 2, 3, is seen the pars membranacea septi. 15. Aorta laid open.

body is constantly perforated by a considerable artery derived from the right coronary. The point of perforation of this artery is shown in Fig. 5.

The *a. v.* bundle passes along the upper margin of the interventricular septum within the fibrous tissue of the pars membranacea septi. This structure (the pars membranacea) is roughly triangular in shape; it is commonly very extensive in hearts which have worked against a high arterial pressure. The best conception of its shape and position is obtained by examining it from the left side (Fig. 4). The base of the membranous triangle is formed by the upper margin of the interventricular septum; the posterior margin is bounded by the base of the non-coronary cusp and central

fibrous body, with which the base of the mitral valve is continuous (Fig. 4). Viewed from the right side the membranous space appears rather complicated (see Fig. 3). Its triangular shape may still be recognised; the base is formed by the upper margin of the interventricular septum, the anterior margin by the right coronary cusp (Fig. 3) and the right wall of the infundibulum, the posterior boundary by the non-coronary cusp (Fig. 3, 12), and the central fibrous body. On the right aspect the pars membranacea shows three distinct parts: one in the septal wall of the right auricle (auricular part), another in the right ventricle under the base of the septal cusp (ventricular part), and a third above both auricle and ventricle between the right coronary and non-coronary cusps (intra-cuspidate part) (see Fig. 3, between 13 and 12).

FIG. 5.



Semi-diagrammatic representation of the central fibrous body of the heart to show its intimate connexion with the mitral valve. The auricles are cut away and the adjacent parts of the bases of the ventricle are viewed from above. 1. Central fibrous body opened out; the muscular network from which the auriculo-ventricular bundle arises is cut away; the point of perforation of a constant septal artery is shown. 2. The bundle dividing in front into right (2') and left (2'') septal divisions. 3. Base of septal cusp of tricuspid valve. 4. Upper part of the interventricular septum. 5. Base of the right ventricle. 6. Base of the left ventricle. 7. Mitral valve—there is stenosis with endocardial ulceration in the part nearest to the central fibrous body; disease is spreading towards the central fibrous body. 8. Conus arteriosus of the left ventricle from which the aorta arises. 9. Continuation of the central fibrous body into the aorta and intersuricular septum. 10. Interventricular septum between the infundibulum of the right ventricle and conus arteriosus of the left. Between 9 and 10 runs the pars membranacea septi, here shown in section; along it runs the main auriculo-ventricular bundle.

In the sheep's heart, and, indeed, in most mammalian hearts, there is no pars membranacea; the membranous septum is replaced by a mass of musculature which covers over and buries the *a. v.* bundle. Remnants of this subaortic musculature often occur in human hearts; an example is shown in Fig. 4, just covering the left septal division of the *a. v.* bundle under the right coronary cusp. In some human hearts the pars membranacea is partially or completely replaced by muscle which fills up the angle between the aortic cusps usually occupied by the pars membranacea septi. The functional significance of the subaortic musculature is unknown to us.

Between the *a. v.* bundle (as shown in Fig. 3) and the cut edge of the septal cusp is shown the upper margin of the interventricular septum; frequently this musculature rises up within the space normally occupied by the pars membranacea. In such cases the *a. v.* bundle is deflected for part of its course to the left side of the septum. We found that the bundle was so deflected in many of the earlier cases which we examined and in which we failed to detect the bundle in the course of dissection. The right septal division of the *a. v.* bundle leaves the main bundle by turning sharply downwards (Fig. 3); its point of origin may be termed the genu or knee. At the genu the fibres of the *a. v.* bundle appear in part, or even entirely, to terminate in a strong tendinous mass of fibrous tissue situated at the base of the right coronary cusp of the aorta. This mass of fibrous tissue has an important relationship to the *a. v.* bundle and deserves special mention, as it appears in all microscopic preparations made to expose the bundle in this region of the heart. It is much less massive than the central fibrous body but is similar in nature and function. By it the anterior fibres of the interventricular septum are united to the aorta; in systole this tendinous structure has to withstand the tension exercised on it by the heart when forcing the blood within the aorta. The tendinous fibres of this structure unite with those of the central fibrous body along the lower margin of the pars membranacea; on these uniting fibres, as on a floor, the *a. v.* bundle passes forward. In Fig. 3 the right septal division of the *a. v.* bundle is represented as a clearly differentiated structure but in nearly half the number of human hearts examined we were unable to follow the right septal band as a clearly differentiated continuation of the main bundle. Even in some of the hearts which were cut and examined microscopically it was only after a close search that we were able to find a strand of musculature which was clearly separated by its structure from the ordinary musculature of the septal wall.

In studying the finer structure of the *a. v.* bundle and of its ramifications in the sheep's heart two of its characters impress one—viz., (1) the character of the muscle cells of this system; and (2) the manner in which they are isolated from the ordinary musculature of the heart by sheaths of connective tissue. The network of auricular musculature in which the bundle commences is made up of peculiarly narrow muscle cells, almost fusiform in shape, united together so as to form a meshwork; the striation is less clearly marked than in the rest of the auricular fibres. The main bundle is made up of similar fusiform or narrow elongated fibres while its ramifications are made up of the peculiar Purkinje fibres—so different from the ordinary fibres of the ventricles. The Purkinje fibres are very large; the cells which compose them are pale; with the van Gieson stain they become of a straw yellow colour; only their outer stratum is striated; the great part of their cell body is undifferentiated protoplasm in which the nucleus is contained; wherever a part of this system appears in a microscopic preparation it is at once recognised. It is sometimes said that these Purkinje fibres are embryonic in character—undifferentiated cells. If by embryonic is meant that they resemble the cardiac fibres of the heart of the embryo, then nothing could be further from the truth; if by embryonic is meant the fact that only the superficial stratum of the fibres are striated—the interior being undifferentiated cell substance—then in this feature they are embryonic. But in shape and size they are not embryonic. They are cardiac fibres which have specialised in a peculiar direction; their fibrillar structure is especially distinct.

When the finer structure of the *a. v.* bundle system is examined in the human heart the peculiar features seen so clearly in the sheep's heart can be recognised but not with the same precision. The isolation of the system by sheaths of fibrous tissue is still present, especially in the first stages of the bundle within the ventricles. The structure of the auricular network (situated at, and in, the central fibrous body) from which the bundle arises, and the main bundle itself, have the same structure as in the sheep but its ramifications are not made up of distinctly marked Purkinje fibres; it is very hard to distinguish the fibres of this system from the ordinary ventricular muscle fibres, except by reference to three features: (1) they are smaller than the usual ventricular muscle fibre; (2) they are isolated by thick fibrous sheaths; and (3) they stain less deeply than the ordinary musculature; nuclei are more numerous; large multi-nucleated fibres occur. Tawara, on the other hand, reproduces drawings of the fibres of this system of the human heart in which the characteristic features of the Purkinje system are clearly recognisable. Further and more accurate observations have convinced us that in this Tawara is right; the ramifications are mede up of cells which certainly show the Purkinje characters. We found, as Tawara did, that this system does not enlarge with hypertrophy of the heart or diminish in atrophy.

From our investigations of the arrangement of the *a. v* bundle system in malformed human hearts, in the heart of the human fœtus, and in amphibian and reptilian hearts we have obtained certain facts which throw some light on its history and nature. Why should the bundle perforate the central fibrous body? The central fibrous body for the greater part is derived from the endocardial cushions of the fœtal heart, especially the posterior one. Now it was on and in the posterior endocardial cushion of the turtle's heart that we found the freest communication between the auricular and ventricular musculatures; in the heart of the turtle we found a considerable bundle of musculature of the right auricular canal ending on the posterior endocardial cushion (posterior valve of the auriculo-ventricular orifice) and freely mixing at its insertion with the origin of the sub-endocardial musculature of the ventricle. If we are right in regarding the central fibrous body of the human heart as a derivative (in part at least) of the posterior endocardial cushion, then it follows that the muscular network found at the commencement of the *a. v* bundle in the central fibrous body is the representative of the interdigitation of the auricular and ventricular musculatures in the reptilian heart.

We found that the *a. v.* bundle is differentiated and relatively massive in the heart of the human embryo of 45 millimetres long (11 weeks). In malformed hearts it was clearly derived from the circular fibres of the canal of the right auricle; it passed into the ventricle behind, and to the right of, the tissue which goes to form the central fibrous body and pars membranacea septi; on reaching the interventricular foramen it spreads out beneath the endocardium on the lower margin of that foramen and descended on both sides of the septum.

Why should the main bundle pass along the upper margin of the interventricular septum? In this position it is resting on that part of the heart which undergoes least change during the systolic changes of the heart. But there is also an embryological reason. The upper margin of the interventricular septum represents the least disturbed part of the interior of the embryonic heart. The evidence is now accumulated which shows that the interventricular septum is not developed by a process of up-growth as His supposed; its development is the result of an opposite process; the ventricles are outgrowths or bulgings of the primitive cardiac tube; the septum is that part of the tube which remains between the outgrowths; hence the upper border of the septum represents the least changed part of the lumen of the embryonic heart and it is there that the *a. v.* bundle is found.

Langendorff[15] has summarised recently the literature bearing on the physiology of this system, so that there is no need for us to deal with this matter. But there is one point which he omits and which we believe throws a side-light on the nature of this system—viz., the functional difference between pale and red musculature as we know it in the voluntary muscular system. The *a. v.* bundle is of the pale type, the ordinary cardiac musculature of the red. Dr. John Hay[16] has demonstrated that the pale voluntary muscles conduct and contract more rapidly than the red.

With regard to the clinical importance of the bundle much has been published recently, especially in connexion with cases of Stokes-Adams disease. From the interpretations placed by Wenckebach and Mackenzie upon tracings obtained in such and similar cases it has been apparent that in most of them there exist irregularities between the auricular and ventricular rhythm. The important question is, What is the cause of such irregularity? W. His, jun.,[17] writing in 1899 upon a case of the disease, opined that a lesion of the auriculo-ventricular bundle might be the cause. Recently both Hering[18] and Erlanger have entered much more fully into the subject. Both believe that a lesion of the fibres of the bundle of His can in itself account for the syndrome of events in Stokes-Adams disease. Erlanger[19] has come to the conclusion as the results of his observations upon a case under the treatment of Professor Osler. A comparison of these results with those of his experiments upon the dog's heart quoted above is exceedingly striking. In the case under observation he observed at different times all degrees of heart block. When the block was complete he found that the ventricles did not respond to influences presumably of vagus origin, whereas the auricles did. Both ventricles and auricles, however, were still under the influence of the accelerator nerves. With partial block the ventricular rate varied within certain limits proportionately to the auricular rate, but if these limits were exceeded the block became complete. Erlanger believes the syncopal attacks of Stokes-Adams disease to be due to the effect of the reduction of the ventricular rate upon the cerebral circulation. He found also that the general blood pressure is lower than normal when the heart block is complete. He considers a certain number of reported cases of the disease and comes to the conclusion that none has been described in which heart block might not have existed; indeed, all cases which have been studied by accurate methods show such to have been undoubtedly the case. Erlanger classes heart block, with and without syncopal attacks, as different phases of the same disease process.

Evidence has recently been forthcoming in support of the conclusion of Hering and Erlanger. Stengel[20] has published the result of a post-mortem examination on a case of Stokes-Adams disease. In the left side of the heart was found an atheromatous patch extending through the endocardium over the bundle of His as it passes from the auricle to the ventricle. M. E. Schmoll[21] of San Francisco appears also to have discovered a lesion of the bundle in a necropsy upon a case of this disease. Recent literature also testifies to the general acceptation of this fact in non-fatal cases. Rihl[22] has published an account of five cases which he holds to be due either to partial or complete block as defined by Hering. Lichtheim[23] describes a case which he believes to be due to a lesion of the bundle produced by sclerosis of the coronary arteries. Leuchtweis[24] gives details of a case in which he diagnosed total heart block due to a lesion of the bundle. He found, as did Erlanger, that atropine did not influence the rhythm of the ventricles but caused a slight increase in auricular frequency. Finkelnburg[25] describes a case in which every third beat of the auricles caused the ventricles to contract. He believes this is due to some impairment of the conducting power of the bundle of His. Belski[26] publishes three cases of Stokes-Adams disease, two atypical and one typical. He comes to the conclusion that in each case the explanation lies in the fact that "a Stannius experiment has been performed by nature." Belski makes no reference to the bundle of His but from a careful study of his tracings and from what we now know to be the explanation of Stannius's experiment we can say that in each of these cases a lesion of the bundle of His probably existed. Whether, of course, a lesion of these fibres exists in every case of Stokes-Adams disease is still open to question. His, jun., thinks that in some cases the same phenomena can be produced by lesions of the vagi. In any case sufficient has been written here to show the great importance clinically of the auriculo-ventricular bundle.

[15] Langendorff: Ergebnisse der Physiologie, 1905, p. 786.
[16] John Hay: Dissertation on Certain Phenomena regarding Red and Pale Muscles. Liverpool, 1901.
[17] W. His, jun.: Deutsches Archiv für Klinische Medicin, Band lxiv., p. 329.
[18] Report of Congress for Internal Medicine, Munich, Semaine Médicale, May 9th, 1906, p. 223.
[19] Erlanger: Loc. cit. Also Journal of Experimental Medicine, vol. vii., p. 678.
[20] Stengel: American Journal of the Medical Sciences, vol. cxxx., p. 1043. Cf. also THE LANCET, Jan. 27th, 1906, p. 238.
[21] Cited by Hering, Semaine Médicale, loc. cit.
[22] Rihl: Zeitschrift für Experimentelle Pathologie und Therapeutics, Band ii., p. 83.
[23] Lichtheim: Deutsches Archiv für Klinische Medicin, Band lxxxv., p. 380.
[24] Leuchtweis: Ibid., Band lxxxvi., p. 456.
[25] Finkelnburg: Ibid., Band lxxxvi., p. 462.
[26] Belski: Zeitschrift für Klinische Medicin, Band lvii., p. 529.

A SUCCESSFUL CASE OF SPLENECTOMY FOR RUPTURE OF THE SPLEEN;

WITH REMARKS ON THE DIAGNOSIS AND TREATMENT OF THIS ACCIDENT.[1]

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Two reasons have influenced me in reading this paper before you to-night: the first, that successful operations for traumatic rupture of the spleen are still uncommon; the second, the hope that some remarks that I shall make on the diagnosis and treatment of this accident may form the

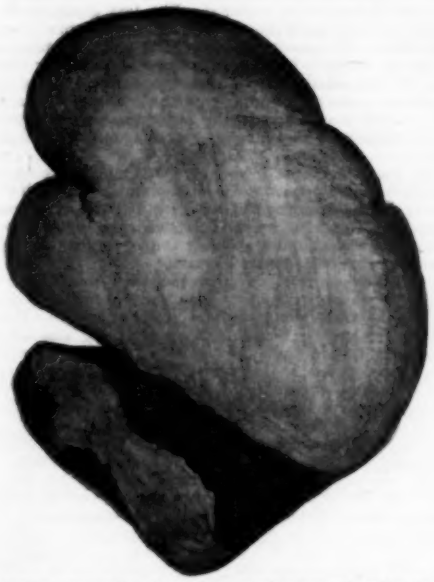
[1] A paper read before the Clinical Society of London on Nov. 10th, 1905.

starting-point of a useful discussion. I will now give an account of the case.

The patient, a man, aged 27 years, a builder's joiner, was at work on a joist on August 10th, 1904, when the joist broke and he fell through a ceiling on to the floor below, a distance of some 20 feet. He thought that he struck his left side against some projection during his fall, but he was not certain about this, though he was not rendered unconscious by the accident. This happened at 10 A.M., and he was at once taken to the Sheffield Royal Hospital, where he was admitted for a fracture of the left femur; he certainly did not at the time of admission complain of abdominal pain. He was admitted under the nominal care of Mr. R. J. Pye-Smith during his absence on a holiday, and to his kindness I am indebted for permission to publish the case. At 2 P.M. (four hours after the accident) I was called to see the patient as he was complaining of severe abdominal pain. I found him looking pale and anxious and obviously in great pain; his face was drawn and haggard and his breathing was thoracic and jerky. His pulse was 140, his temperature was 100° F., and his respirations were 50. He complained of unbearable pain in the abdomen, "like stomach-ache but more acute"; he felt sick but had not vomited and he was sure that he was going to die. He wanted to pass urine but was unable to do so; his bowels had not acted since admission. His injured leg was not troubling him. On examination the abdomen was rigid, especially in its upper part; it did not move with respiration. The liver dulness was present and there was some dulness in the epigastrium. The abdominal wall was tender on pressure, more so in the upper part. I felt sure that a catastrophe had happened inside the abdomen and that an exploration should be performed at once.

I was inclined to diagnose rupture of the intestine high up. Some delay was caused by my not being able to find any of the honorary staff (I was house surgeon at that time) and as I feared that any further waiting would be fatal, at 3.45 P.M. (five and three-quarter hours after the accident)

FIG. 1.



Antero-external aspect of spleen, showing laceration of lower pole.

chloroform was administered and I made a vertical incision just to the left of the umbilicus, with the level of that point as its centre. On opening the abdominal cavity neither gas nor fluid escaped nor were there any signs of commencing peritonitis, but on inserting my hand to explore the upper part of the abdomen, directly the omentum was pressed away from the anterior abdominal wall, there was an alarming rush of dark red blood. This appeared to come from the left lobe of the liver which was then examined but with some difficulty, as the blood flowed with great rapidity and continually flooded the field. As no obvious lesion of the liver was found the spleen was next palpated and I easily made out a large transverse tear, starting from the hilum and nearly separating the lower third of the organ. A long pair of artery forceps was applied to the pedicle which at once controlled the bleeding and made the rest of the operation simple. The incision was

FIG. 2.

Postero-internal aspect of spleen, showing laceration and stripping of capsule. The spleen has been added to the pathological museum of the University of Sheffield.

prolonged upwards and the spleen was brought round in front of the stomach, so that its anterior and external surface looked backwards and inwards, the pedicle was transfixed and ligatured with stout silk from its posterior aspect, the spleen was excised, and the blood was swabbed out of the abdominal cavity. The wound was sewn up in layers. The patient was not so well by this time, though his condition was by no means desperate; it was thought advisable to infuse three pints of saline fluid into a vein on account of his having lost so much blood. The operation took about three-quarters of an hour; on his leaving the table the patient's pulse was very frequent but quite distinct.

Next morning (August 11th) the patient had passed a fair night and had slept at intervals; he had vomited once after drinking some hot milk and had complained of some abdominal pain; saline enemata had been ordered every four hours but had not been well retained. His pulse was 110 and of fair tension. One grain of calomel every four hours was successful in causing his bowels to act. A catheter was passed as he was suffering from retention of urine. All went well till the 15th (the fifth day after the operation) when he suddenly began to complain of severe epigastric pain. On examination I found his pulse 120 and his temperature 101°; there was marked pulsation in the epigastrium, no rigidity of the abdominal wall, but great tenderness. I began to fear that my ligature had slipped but decided to wait as I thought the pulsation might be only communicated from the right ventricle. In a short time the patient felt better. After this progress was uneventful with two exceptions. The wound suppurated (I fear that my aseptic conscience must have slept during the excitement of stopping the bleeding) and the femur, which was put up in a Hodgen's splint, was found to be still ununited at the end of six weeks. However, it was put up again in the same way for another six weeks, when it united firmly with half an inch of shortening. The patient was discharged on Nov. 6th with the wound healed

but some separation of the fibres of the left rectus at the site of the scar.

During the three months of his stay in hospital his blood was frequently examined and differential counts were made; it showed the usual changes—viz., a diminution of the red corpuscles which, however, rose to normal in a month and a leucocytosis up to 44,000 which fell to normal in three weeks. The unusual amount of leucocytosis I explain by the occurrence of suppuration. No enlargement of his lymphatic glands was noticed during the first three months but since then his left axillary and inguinal glands have several times enlarged sufficiently to be easily palpated and have again subsided. At no time has he complained of pains in his bones nor has there been any particular pain on percussing them. Nor has he shown that curious group of symptoms, described by Mr. C. A. Ballance and Mr. Bernard Pitts (to which I shall again refer), though no prophylactic treatment was adopted, such as the exhibition of arsenic, sheep's spleens, &c. With the exception of the first fortnight after operation his pulse-rate has always been normal. The only after-consequences that he shows are, first, a ventral hernia and, second, a loss of nerve which prevents him from following his former occupation of builder's joiner, an occupation which involves much climbing about roofs. He has, however, taken up the work of an insurance agent and tells me that he is doing well. My thanks are due to Dr. R. J. Bethune who assisted me at the operation, did most of the blood counts, and also gave me some valuable advice.

Remarks.—From various English sources I have collected 100 cases of rupture of the spleen. Most of the cases recorded before 1891, however, are so scantily reported as to be of little value. In the following remarks I have chiefly relied on 70 cases recorded since 1891. From the point of view of diagnosis sex and age are not of much importance; as in severe accidents generally, males are more often injured than females; in these cases four-fifths of the number were males. The age distribution is most impartial: the oldest patient was 65 years of age and the youngest was in the act of being born. This last was a case of precipitate labour in which the mother was standing at the time and the child fell to the floor. The following is the age distribution (arranged in decades):—

Years.	Number of cases.	Years.	Number of cases.
1 to 10	11	41 to 50	6
11 „ 20	18	51 „ 60	11
21 „ 30	15	Over 60	3
31 „ 40	15		

I would suggest the careful consideration of three points in making a diagnosis of ruptured spleen.

1. *The history of the accident.*—The commonest cause is a sharp blow or kick on the abdomen or side. Under this heading must be included most of the cases of falling from a height, as it will usually be found that the side was struck during the fall. This accounts for 44 per cent. Next in order of frequency is a crush or squeeze, such as cases of run-over and buffer accidents. This accounts for 32 per cent. 12 per cent. are described as due to a sudden movement or strain. These are usually grouped as spontaneous ruptures and are nearly always found to be cases of large, soft, malarial spleens. One, however, was congested from a twisted pedicle. The remaining 12 per cent. are unclassified.

2. The second point in the diagnosis is the signs of internal hæmorrhage. Shock is present in the majority of cases, either at once or within a few hours. Pallor, thirst, restlessness, and retention of urine are usually stated to have been present when they are mentioned in the reports.

3. *The localising signs.*—Abdominal pain and tenderness are very constant; they are usually most marked in the region of the spleen and I have found four cases only where these signs are stated to have been absent. Rigidity of the abdominal wall, in some cases limited to the upper half of the left rectus, is a most valuable sign when present but I was surprised to find that out of 19 cases where this physical sign is mentioned in six it was stated to have been entirely absent and in another case the abdominal wall was described as slightly rigid. This initial rigidity of the abdominal wall is succeeded in from six to 24 hours by distension of the abdomen. The demonstration of dulness in the flanks is the sign which will most surely lead one to a correct diagnosis; if, as described by Mr. Ballance, on changing the position of the patient, the dulness of the right loin disappears but not that of the left a diagnosis of rupture of the spleen or the left kidney can be safely made. I feel sure that if my attention had been drawn to Mr. Ballance's paper before I had seen my case I should have been able to diagnose it correctly. Diminution of the liver dulness has been noted in a few cases and can be explained by the distension of the abdomen or by a concomitant rupture of the stomach or small intestine. No external marks of injury are present in most cases.

From the point of view of treatment I propose to divide the cases into four groups: 1. The patient dies at once or within a few minutes of the accident. These cases hardly come within the range of surgery and I can find no cases of successful operation within the first hour. 2. The opposite extreme: the symptoms are greatly delayed. I have found instances of delay from 24 hours to 15 days; this can be accounted for by the temporary arrest of the bleeding by clotting or, in some cases, by the hæmorrhage being at first subcapsular and later bursting through the capsule. 3. The majority of cases; here the initial shock of the accident, when present, is recovered from and symptoms of hæmorrhage only show themselves after a period of from one to 24 hours. 4. A very few cases where the symptoms of rupture of the spleen have been present and have gradually passed off without operation.

Which of these groups of cases require operative measures? After careful consideration my answer is, "All." In the first group the only chance is immediate laparotomy, though I fear there is not much hope of saving the patient. The cases in the second group—viz., those of delayed bleeding—are in great danger. The clot may become displaced or the capsule may rupture from distension; and in some of them, at any rate, the secondary bleeding is very severe. I think it may be laid down as a sound surgical rule that if, after showing the signs of an intra-abdominal hæmorrhage, a patient recovers but on examination the spleen is found enlarged, an exploratory laparotomy is strongly indicated. I do not think any surgeon will dispute that the cases in the third group should be explored. The last group where the patient recovers after showing the signs of a ruptured spleen (but without obvious enlargement of the organ) I propose to include as suitable for operation for the following reason: that in two cases the effused blood has become auto-infected; in one case leading to a subdiaphragmatic abscess and a fatal result and in the other to signs of sapræmia which necessitated opening and washing out the abdominal cavity.

One question that I should very much like to hear discussed is, May one operate simply on the strength of the history of the accident? I am sure that two fatal cases of rupture of the intestine that I have seen would have recovered if that had been done; the objections to such a proceeding are sufficiently obvious.

As to the operation, a vertical incision through the rectus muscle is probably the best to start with; one is not always certain about the diagnosis and if there are no adhesions and the spleen is not enlarged everything can be done through this incision. If, on the contrary, there are adhesions between the spleen and the diaphragm the operation becomes at once one of the most hazardous in the range of surgery; in that case a transverse incision below the left costal margin will be necessary.

Of the methods employed to stop the bleeding ligature of the pedicle alone has been performed in one case where it was found impossible to excise the spleen. Suture has not, as a rule, been found satisfactory, though a successful case has recently been published. The splenic substance is so friable that this method is likely to be employed only in tears limited to the capsule. With regard to gauze-packing and tampons these are not always trustworthy and are likely to cause extensive adhesions which may lead to subsequent obstruction. This method will, I think, be the best for cases where, owing to adhesions between the spleen and the diaphragm, excision of the former is too risky a proceeding. Excision of the spleen will usually have to be performed: first, because the injury is often so severe; the organ has in many cases been found torn into two or more pieces and portions have been washed out of the pelvis; and secondly, because of the frequency with which the vessels of the pedicle are involved in the injury. Moreover, clamping the pedicle at once controls the hæmorrhage.

The mortality of the operations for rupture of the spleen that I have collected is as follows: of 70 cases recorded since 1891 42 were operated on; of these 27 lived and 15 died, a mortality of 36 per cent. (all those not operated on died). This mortality is probably much too favourable, as some cases that have been operated on and died may not have found their way into the literature.

The causes of failure after operation are: (1) peritonitis; (2) complications, such as rupture of other solid or hollow abdominal viscera, especially the left kidney; injuries of the left pleura, as hæmothorax; and other injuries, as fracture of the base of the skull; and (3) operation performed too late. Out of 28 cases where it is stated how long after the accident the operation took place three operations were performed within the first two hours. All three died (probably very severe cases). Fourteen operations took place from three to 24 hours after the accident; 11 lived and three died. Six operations were done "the next day"; five lived and one died. Five operations were done from two to eight days after the accident, only one of which lived.

The sequelæ of the operation of splenectomy present a most interesting problem. The majority show no abnormal effect except a transient anæmia and leucocytosis which swings back to normal in about a month, and an enlargement of the lymph glands, most often the left axillary and inguinal; otherwise the patients are healthy. In two cases the patients, though pregnant at the time of operation, have gone on to term. Another patient was successfully operated on for a resulting ventral hernia. A fourth recovered from an attack of typhoid fever after losing his spleen. In five recorded cases (viz., those of Mr. C. Ballance, Mr. Bernard Pitts, Mr. J. Rutherford Morison, Mr. Heaton, and Mr. H. Burrows) a curious set of symptoms supervened on and after the tenth day; these were, progressive emaciation (one case lost 3 stones), attacks of epigastric pain, pyrexia, thirst, rapid pulse and respiration, headache, drowsiness, and irritability of temper. These cases have cleared up on the exhibition of arsenic and sheep's spleens; in one case the patient relapsed when the treatment was discontinued. Mr. Ballance has suggested that these symptoms may be due to the fact that it takes some time for the other organs of the body to take over the functions of the spleen and that it is less likely to occur in children in whom the tissues are said to be less specialised. The latter part of his theory is not supported by the ages of the five cases which I have just referred to; they were 4, 9, 16, 36, and 45 years.

Note on the blood.—Ehrlich, in his work on the blood, quotes Gurloff's experiments on excision of the spleen in guinea-pigs. The latter finds a marked increase of the lymphocytes during the first year after splenectomy, corresponding to the enlargement of the lymph glands, and a moderate eosinophilia after the first year. The blood counts in my case show eosinophilia in the second year, but the earlier counts were probably vitiated by the occurrence of increase of neutrophiles owing to the suppuration of the wound.[2]

Blood Counts.

August 13th, 1904 (three days after admission).—Red corpuscles, 3,376,000; white corpuscles, 10,000; hæmoglobin, 60 per cent. Differential count.—Neutrophiles, 75 per cent.; small mononuclears, 13·3 per cent.; large mononuclears, 10·6 per cent.; eosinophiles, 0·5 per cent.; and nucleated red corpuscles, 0·6 per cent.

August 18th (eight days after admission).—Red corpuscles, 2,592,000; white corpuscles, 16,000; hæmoglobin, 60 per cent. Differential count.—Neutrophiles, 81 per cent.; small mononuclears, 12 per cent.; large mononuclears 5 per cent.; eosinophiles, 1 per cent.; and nucleated red corpuscles, 1 per cent.

August 21st (11 days after admission).—Red corpuscles, 3,480,000; white corpuscles, 44,000; hæmoglobin, 60 per cent. No differential count.

August 28th (18 days after admission).—Red corpuscles, 3,360,000; white corpuscles, 16,000; hæmoglobin, 60 per cent. Differential count.—Neutrophiles, 73·6 per cent.; small mononuclears, 13·6 per cent.; large mononuclears, 11·2 per cent.; and eosinophiles, 0·4 per cent.

Sept. 4th (25 days after admission).—Red corpuscles, 4,200,000; white corpuscles, 8000; hæmoglobin, 75 per cent. No differential count.

Sept. 11th (one month after admission).—Red corpuscles, 4,920,000; white corpuscles, 8000; hæmoglobin, 90 per cent. Differential count.—Neutrophiles, 65·5 per cent.; small mononuclears, 27·5 per cent.; large mononuclears, 5 per cent.; and eosinophiles, 2 per cent.

Sept. 25th (six weeks after admission).—Red corpuscles, 4,912,000; white corpuscles, 12,000; hæmoglobin, 90 per cent. Differential count.—Neutrophiles, 73·5 per cent.; small mononuclears, 23·5 per cent.; large mononuclears, 2·5 per cent.; and eosinophiles, 0·5 per cent.

Oct. 1st (seven weeks after admission).—Red corpuscles, 4,288,000; white corpuscles, 12,000; hæmoglobin, 80 per cent. No differential count.

Oct. 8th (eight weeks after admission).—Red corpuscles, 4,800,000; white corpuscles, 12,000; hæmoglobin, 90 per cent. No differential count.

Sept. 14th, 1905 (13 months after operation).—Red corpuscles, 4,762,000; white corpuscles, 6500. Differential counts.—Neutrophiles, 57·66; and transitionals 1·21; total 58·87 per cent.; large mononuclears, 15·32 per cent.; small mononuclears, 21·14 per cent.; eosinophiles, 3·89 per cent.; basophiles, 0·73 per cent.; and mastzellen and erythroblasts, 0.

May 5th, 1906 (21 months after operation).—Red corpuscles, 4,450,000; white corpuscles, 18,000; hæmoglobin, 80 per cent. Differential count.—Neutrophiles, 59·8; and transitionals, 1·5; total 61·3 per cent.; large mononuclears, 14·8 per cent.; small mononuclears, 19·5 per cent.; mastzellen, 0·4 per cent.; basophiles, 0·6 per cent.; and eosinophiles, 3·1 per cent.

Sheffield.

[2] See Ehrlich's Histology of the Blood. Translated by Myers of Cambridge, 1900.

SOME UNUSUAL FORMS OF ANÆMIA IN CHILDHOOD,

WITH REMARKS ON LYMPHATIC LEUKÆMIA (LYMPHÆMIA).

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THE subject of anæmia, as it occurs in childhood, is but imperfectly understood, and such diverse opinions are held as to its classification and the existence of different groups that every contribution to the subject recording varieties of anæmia not commonly met with may serve as a link in the chain towards the better understanding of this form of disease. It is for this reason that we publish the cases which form the basis of this paper. The first two tend to support our views as to the existence of an acute lymphæmia without marked leucocytosis, a fact which we consider has not been sufficiently emphasised or fully appreciated by the profession in general. In the consideration of the cases which follows the clinical histories and pathological findings our views will be found in greater detail. The third case is somewhat anomalous; to relegate it to its proper category is a matter of no little difficulty. We must therefore leave the case to speak for itself, though we append a few remarks as to the class to which we consider that it belongs.

CASE 1.[1]—The patient was a girl, aged two years and one month, who attended the Evelina Hospital on August 25th, 1905, with a history that until four days previously she had been quite well but since then she had been crying and fretful, "off her food," and constipated. In addition, she had scarcely been able to walk owing to the inguinal lymphatic glands, which were noticed to be enlarged and seemed painful; there had been no feverishness or vomiting. The patient had had bronchitis as a baby and measles one year ago. The father was healthy; the mother was "delicate." There were three healthy sisters in the family—two older and one younger. Three brothers and sisters had died in infancy from bronchitis or pneumonia. When first seen on August 25th the child was somewhat thin, fretful, and of a sallow complexion, but not anæmic. The

[1] This case was shown at the meeting of the Society for the Study of Disease in Children on Oct. 20th, 1905.

cervical, axillary, and inguinal glands were moderately enlarged on both sides, the last named being slightly tender. No enlargement of the spleen, liver, or thymus could be made out, and no extraneous cause for the glandular enlargement could be found. During the next ten days no change occurred in the physical signs but the temperature varied between 98° and 101·8° F. On Sept. 8th the inguinal glands were larger and fresh ones had appeared in both femoral regions and in the left axilla. The spleen was felt just below the ribs and the liver edge extended to nearly half way between the costal margin and the umbilicus. All the glands seemed more or less tender and those in the groin prevented the child walking. The general condition was worse and there had been some diarrhœa. The blood showed 4,736,000 red cells and 25,000 white to the cubic millimetre, with 84 per cent. of hæmoglobin. Of the white corpuscles only 2·4 per cent. were polymorphonuclear, while the lymphocytes amounted to 96·4 per cent., of which 65·9 per cent. were of the large variety. A few normoblasts were seen. A fresh gland subsequently appeared on the chest wall in the left axilla and as the inguinal and cervical glands further increased in size the patient was admitted into the hospital on Sept. 15th and the treatment with arsenic continued. The temperature kept under 100° but rose after a week with the onset of some bronchitis, the pulse-rate all along averaging from 110 to 120. On Sept. 26th an attack of herpes zoster of some severity occurred on the left side of the chest and the temperature shot up from normal to nearly 105°, dropping to normal again, however, the next day. The glandular and visceral enlargements continued unchanged and the child's general condition remained for a time the same, so she was allowed to go home at the expressed wish of her parents. On Oct. 20th an outbreak of small purpuric spots occurred over the trunk and legs and 11 days later there was left otorrhœa. On Nov. 10th the general condition was much worse and the anæmia, which had been gradually increasing, was now marked. A loud hæmic bruit was heard over the cardiac area and some bronchitic sounds were present in the lungs. The glands and abdominal viscera were unchanged but the purpura was fading. The temperature was

TABLE I.—GIVING DETAILS OF BLOOD EXAMINATION IN CASE 1.

Date.	Red cells per c.mm.	White cells per c.mm.	Hæmoglobin per cent.	Polymorphonuclears per cent.	Small lymphocytes per cent.	Large lymphocytes per cent.	Large mononuclears per cent.	Transitionals per cent.	Eosinophiles per cent.	Myelocytes per cent.	Basophiles per cent.	Nucleated red cells per 100 leucocytes.	Remarks.
1905.													
Sept. 6th ...	4,736,000	25,000	84·0	2·4	30·5	65·9	—,	1·2	—	—	—	0·6	Normoblasts. Colour index = 0·88.
Sept. 16th ...	3,980,000	9,400	70·0	8·0	51·4	32·4	5·3	1·6	0·3	1·0	—	0·6	Colour index = 0·99.
Sept. 25th ...	—	17,400	—	2·0	14·0	80·0	3·2	0·4	—	0·4	-	0·8	—
Oct. 5th ...	—	8,300	—	10·7	9·0	63·6	15·1	0·8	0·4	0·4	-	7·6	Well-marked polychromasia of red cells.
Oct. 13th ...	3,000,000	22,800	58·0	15·1	19·4	53·3	10·0	0·6	0·6	1·0	—	—	Well-marked polychromasia of red cells. Colour index = 0·96.
Nov. 11th ...	1,870,000	5,600	28·0	—	—	—	—	—	—	—	—	-	Colour index = 0·74.

TABLE Ia.—GIVING THE ACTUAL NUMBER OF CELLS PER CUBIC MILLIMETRE IN CASE 1.

Date.	White cells.	Polymorphonuclears.	Small lymphocytes.	Large lymphocytes.	Large mononuclears.	Transitionals.	Eosinophiles.	Myelocytes.	Nucleated red cells.
1905.									
Sept. 6th	25,000	600	7625	16,475	—	300	—	—	150
Sept. 16th	9,400	752	4831·6	3,045·6	498·2	150·4	28·2	94	38·4
Sept. 25th	17,400	348	2436	13,920	556·8	69·6	—	69·6	139·2
Oct. 5th	8,300	888·1	747	5,278·8	1253·3	66·4	33·2	33·2	630·8
Oct. 13th	22,800	3442·8	4423·2	12,152·4	2280	136·8	136·8	228	—

TABLE II.—GIVING DETAILS OF BLOOD EXAMINATION IN CASE 2.

Date.	Red cells per c.mm.	White cells per c.mm.	Hæmoglobin per cent.	Polymorphonuclears per cent.	Small lymphocytes per cent.	Large lymphocytes per cent.	Large mononuclears per cent.	Transitionals per cent.	Eosinophiles per cent.	Myelocytes per cent.	Basophiles per cent.	Nucleated red cells per 100 leucocytes.	Remarks.
1905.													
Nov. 3rd ...	2,196,000	20,000	42·0	0·8	25·8	72·6	—	0·4	0·2	—	0·2	—	Colour index = 0·95.
Nov. 6th ...	2,140,000	17,000	40·0	4·5	15·5	72·0	6·5	0·5	—	1	—	0·5	Colour index = 0·93.

TABLE IIa.—SHOWING THE ACTUAL NUMBER OF CELLS PER CUBIC MILLIMETRE IN CASE 2.

Date.	White cells.	Polymorphonuclears.	Small lymphocytes.	Large lymphocytes.	Large mononuclear.	Transitionals.	Eosinophiles.	Myelocytes.	Basophiles.	Nucleated red cells.
1905.										
Nov. 3rd	20,000	160	5160	14,520	—	80	40	—	40	—
Nov. 6th	17,000	765	2635	12,240	1105	85	—	170	—	85

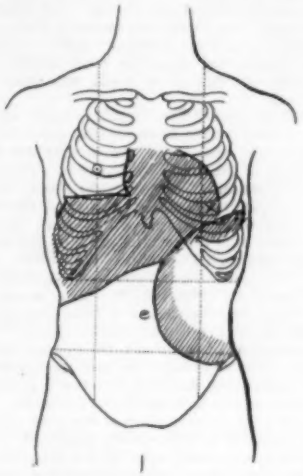
104° and the pulse was from 160 to 180. A bed was consequently again obtained for her in the hospital and she was put on iron, strychnine, and arsenic and brandy. The next day bleeding occurred from the lips and gums but no ocular hæmorrhages could be seen. A blood count showed a diminution of the red corpuscles to 1,870,000, while the leucocytes were 5600. The temperature varied between 102° and 104° and the child was very sick. On the following day (Nov. 12th) she rapidly sank and died.

The various estimations of the blood are given in Tables I. and I A.

Post-mortem examination.—The body was fairly well nourished. Rigor mortis was well marked. Hypostasis was slight. There were small purpuric spots, fading slightly, on the body, face, and limbs. There were large, firm, discrete glands in the cervical, axillary, inguinal, and femoral regions. The lungs were very œdematous and presented several large areas of collapse. There were a few sub-pleural hæmorrhages which were recent and not extensive. The right pleural cavity was normal but the left contained a small quantity of clear fluid and there were a few recent adhesions at the base of the left lung. The bronchial and mediastinal glands were greatly enlarged and of a red colour. There was a little bronchitis. The heart muscle was pale but not flabby; the valves were normal. There were large pale clots in both sides of the heart. Under the epicardium there were a few small hæmorrhages. The spleen was only slightly enlarged; it was soft and of a dark-red colour. The liver was pale and slightly enlarged but otherwise normal in appearance. The stomach and intestines presented no abnormal appearances. There was no obvious change in the lymphoid tissue of the intestine. The mesenteric glands were considerably enlarged, moderately firm, and reddish in colour; some were hæmorrhagic. The retro-peritoneal glands were large and of a deep red colour. The bone-marrow of the ribs was pale and thicker than normal.

Microscopical sections.—Lymph glands: The lymph follicles were distinct. The lymphocytes were mostly small. The lymph sinuses appeared dilated but were nearly empty. There were a slight increase of connective tissue and slight proliferation of the endothelial cells. The large cells described by Andrewes which occur in lymphadenomatous glands could not be seen. Spleen: The Malpighian bodies were mostly ill-defined and in many of them the centre was occupied by a small, granular, structureless mass. The pulp was very crowded with red blood cells but the vessels were not distended. The lymphoid cells were mostly small. The connective tissue was increased slightly and there was a little thickening of the capsule. Liver: Microscopical sections showed very small deposits of lymphoid cells almost entirely confined to the portal canals. Films of the bone-marrow of a rib showed an enormous increase in number of the non-granular cells, the majority of them being considerably larger than a red blood corpuscle. Myelocytes and eosinophiles were present, but in very small numbers. Comparatively few red blood cells were to be seen and of them hardly any were nucleated.

CASE 2.—While the last case was still under observation a small girl, aged four years and eight months, was brought to the hospital on Nov. 3rd, 1905, on account of general pallor of three weeks' duration. Prior to that she had seemed quite well and strong and had had a good colour. Two weeks before a rash had appeared and this had become much more plentiful during the preceding few days. The appetite had been good and the child did not seem ill at first but latterly had had slight coryza and headache. She had been sick occasionally, the vomit being streaked with blood. The patient had had measles when two and a half years of age and diphtheria six months before the onset of the present symptoms. There was a history of rheumatism on both sides of the family and of the death of three brothers and sisters from bronchitis in infancy; three brothers and sisters, two of whom were older, were living and in good health. When first seen the child was irritable and very pale, the mucous membranes being blanched. The whole of the trunk and extremities were covered with discrete purpuric spots of small size; a few were apparently in the deeper tissues but for the most part they were in the skin. One was present on the anterior surface of the lower gum. The cervical, axillary, and inguinal glands on both sides were enlarged, shotty, and moveable, but not tender. In the chest there were signs of general bronchitis and of considerable dilatation of the heart. The apex beat was in the fifth space half an inch external to the nipple line and the cardiac dulness extended to the third left interspace and to just beyond the sternum on the right; a systolic murmur was audible in the pulmonary area and to a less extent at the apex but it was not conducted into the axilla. The abdomen was full, the spleen being much enlarged and soft but not tender and extending from the eighth rib in the mid-axillary line to three inches above the centre of Poupart's ligament. The liver also was big, being soft, smooth, and painless on palpation. The upper limit was the fifth rib in the right nipple line, while the lower edge could be distinctly felt four inches below the ensiform cartilage. The blood was



watery and pale and showed very little tendency to coagulation. The red cells numbered 2,196,000 and the white 20,000 to the cubic millimetre; the hæmoglobin was 42 per cent. Of the leucocytes only 0·8 per cent. were polymorphonuclear, while the lymphocytes totalled 98·4 per cent., 72·6 per cent. being of the large variety. Through the kindness of Dr. F. Willcocks the patient was admitted into the hospital two days later when an examination of the eyes revealed a large, fairly recent, hæmorrhage with a central decolourised area to the outer side of the left optic disc. In the right eye there was a marked myopic crescent on the inner side of the disc but no hæmorrhage in the fundus could be seen. The pupils were dilated but there was no external abnormality in either eye. For the first few days the child was drowsy and fretful and vomited occasionally, the ejecta being streaked with blood. The bronchitis became more marked and on the 9th the patient became very restless and obviously worse. Frequent retching and occasional vomiting persisted. The temperature, which was only slightly raised on admission, now fluctuated between 100° and 102° F. accompanied by rapid pulse and respiration. On the 10th she was weaker and somewhat delirious and slight hæmorrhage occurred from the gums. She died early in the morning of Nov. 11th. (See Tables II. and IIA.)

Necropsy.—A post-mortem examination was made about 15 hours after death. Rigor mortis was well marked; there was only very slight hypostasis. The body was extensively marked with a purpuric rash, somewhat faded and brownish. The rash was present also on the limbs and face. The superficial lymphatic glands generally were enlarged; they were moderately firm and were not matted together. The lungs showed many hæmorrhages of various sizes, both sub-pleural and into the lung substance. The left apex was the seat of an extensive hæmorrhage. The majority of the hæmorrhages were recent but some were apparently older, the clots being decolourised and firm. There were some slight pleural adhesions. The bronchial glands were enlarged, of firm consistence, but succulent. Many of the glands contained hæmorrhages of varying extent. The thymus appeared normal but was rather large for a child of this age, weighing 12 grammes. The tonsils were large and both contained hæmorrhages. The heart was large; there was no valvular

disease but the heart muscle was flabby and pale. There were many small hæmorrhages to be seen under the epicardium, under the endocardium, and also into the heart muscle. The pericardium contained a slight excess of fluid which was clear but stained with hæmoglobin. The stomach was normal in appearance. In the small intestine there were numerous punctiform submucous hæmorrhages, but neither Peyer's patches nor the solitary glands were enlarged or unduly prominent. Of the mesenteric glands some were normal in size, but many were enlarged, soft, and juicy, and pinkish in colour, while many showed more or less extensive hæmorrhages. The retro-peritoneal glands were large, soft, and of a deep pink colour. The liver weighed 26 ounces and was pale; on section no lymphoid deposits were visible to the naked eye. The spleen was considerably enlarged, weighing ten ounces; it was friable and of a dark red colour; there were no infarcts. The pancreas, kidneys, and suprarenal capsules were normal in appearance. The bone-marrow from a rib was pale pinkish in colour and thick.

Microscopic Sections.—The lymph glands showed great hyperplasia of the lymphoid elements; the outlines of the lymphatic follicles could not be clearly recognised, the normal structure of the gland being obliterated by the diffuse lymphoid proliferation. The cells were chiefly large lymphocytes. Many of the lymph sinuses were packed with lymphocytes, but some were empty. There were no increase of connective tissue and no proliferation of the endothelium. Spleen: The Malpighian bodies were few, small, and indistinct. The pulp contained large numbers of large lymphocytes and red blood cells. The vessels were not distended. The connective tissue was slightly increased, but the capsule was not thickened. Liver: There were numerous collections of lymphoid cells, some circumscribed, some diffuse. The deposits were not limited to the portal canals and connective tissue round the interlobular veins, but occurred anywhere in or round the lobules. There were many small areas of degeneration of the liver cells. Kidneys: Microscopic sections showed fairly numerous small diffuse infiltrations with lymphoid cells. These deposits were chiefly round the larger vessels and about Bowman's capsules.

Films made from the bone marrow of a rib consisted chiefly of mononuclear non-granular cells with a very small amount of protoplasm surrounding the nucleus. These cells were of two sizes, one of about the same size as a red blood corpuscle, the other nearly twice the size, the larger cells being much more numerous than the smaller. There were a few cells with large nuclei, either oval or spherical, and a considerable amount of slightly basophilic, non-granular protoplasm. Granular cells were extremely scarce. Red blood cells were not numerous and nucleated red cells were rare.

These two cases, as so often happens with rarities or abnormalities, occurred almost simultaneously in hospital practice and, as a matter of fact, died within one day of each other, though one was of 12 weeks' duration and the other of only four. As will have been seen, the course of each of the two cases was in many ways identical, while the estimations of the blood and the differential counts of the leucocytes showed a great similarity. Both patients were small girls and in each case there was a history of sudden onset of the illness, although the initial symptoms showed a slight disparity, general malaise and glandular enlargement being noticed in the first case and the outbreak of a purpuric rash without constitutional disturbance in the second. The glandular swellings in the latter, though not previously noticed by the mother, were very evident when the patient was first seen, so that, even if they had not existed from the first, at any rate they occurred at an early stage of the disease. It is to be noted that the onset of purpura in the first case was prodromal to a rapidly fatal termination, only 16 days elapsing between its occurrence and death, while the second, in which, as already stated, the purpura was present from the beginning, was of only one month's duration. In the latter case the marked cardiac dilatation was a prominent feature.

The blood in both instances showed a remarkable diminution in the number of polymorphonuclear cells, with a corresponding increase in the mononuclear elements, which at one time amounted to 97·2 and 98·4 per cent. of the total leucocytes in the two cases respectively. Of these the majority consisted of large lymphocytes; in only one count during the earlier stages of Case 1 did the small variety seem to preponderate, while towards the end of Case 1 and throughout the course of Case 2 the excess of the larger form was very marked. Of the other leucocytes, a few eosinophiles and myelocytes were found in both, and an occasional basophile in the second. This lymphocytic excess, it will be observed, occurred without any great increase in the total number of white cells, the leucocytosis in neither instance at any time exceeding 25,000 per cubic millimetre. The red cells in both cases showed a decided decrease towards the end with the presence of a small number of normoblasts, and degenerative changes were exemplified, in Case 1 at all events, by polychromatophilia. The colour indices throughout were only slightly below 1.

Clinically the signs were consistent with a diagnosis of acute lymphatic leukæmia, early involvement of the lymphatic glands generally, enlargement of the spleen and liver, a progressive anæmia and cachexia, and a tendency to hæmorrhages (very marked in Case 2) followed by an early death, while the markedly increased proportion of lymphocytes in the blood, in spite of the fact that at no time was the leucocytosis of any unusual extent, further completes the picture.

Cases of acute lymphatic leukæmia without marked leucocytic increase have been described, such as that by Cabot,[2] in which the leucocytes fell as the result of sepsis from 40,000 to 471 on the day of death; that by F. Taylor[3] of a boy, aged ten years, whose white cells numbered 15,000 when first seen, but with an increasing lymphocytosis amounted subsequently to 50,000; one by Gilbert and Weil,[4] in which all the leucocytes were lymphocytes and the total numbers varied between 22,010 and 46,400; and two by McCrae,[5] one of a boy, aged three years, who at the first count had 26,000 leucocytes, of which 86·5 per cent. were lymphocytes (45 large and 41·5 small) and subsequently 60,800 with 99·2 per cent. of lymphocytes, the small variety amounting to 96·6 per cent.; the other of a man, aged 20 years, whose leucocyte count was 12,000, the percentage of the total lymphocytes being 94·2 and that of the small kind 93·3. Furthermore, Hutchison[6] states that "it must be admitted that cases of true lymphatic leukæmia do occur in which, at one stage of the process at least, there is no *absolute* increase of the total leucocytes, but in such cases there is notwithstanding a marked absolute increase of lymphocytes, whilst the normal total count is due to a great reduction of the polynuclear forms."

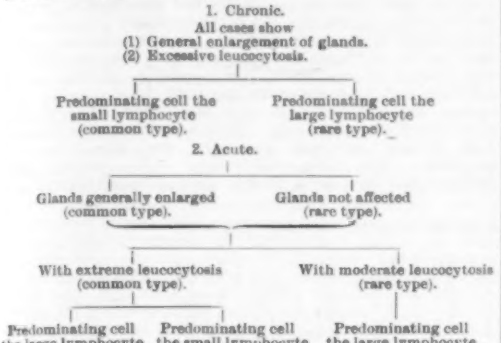
A consideration of the disease from a general standpoint leads to the conclusion that lymphatic leukæmia, or more correctly speaking lymphæmia or lymphocythæmia, is a condition presenting itself in many different forms. The differences met with in these cases are so various that at first it appears that one would be almost justified in asserting that every case is atypical. In spite, however, of the diverse appearances shown by this disease we can divide it into two distinct classes—namely, acute and chronic—and furthermore we can subdivide these two into several types with which are associated certain more or less definite characteristics. In the *chronic* cases, which are decidedly less common than the acute, we have two constant features: (1) there is always a general glandular enlargement; and (2) there is always an extreme leucocytosis—i.e., one approaching 100,000 per cubic millimetre and frequently exceeding that number. The majority of the white cells are lymphocytes (from 85 to 99 per cent.) and in these chronic cases the small lymphocytes generally, but not always, predominate. Thus, in a chronic case observed by one of us recently there were 138,000 white cells per cubic millimetre, of which 91·2 per cent. were large lymphocytes and 1·8 per cent. were small.

In the *acute* cases, on the other hand, there may be a general enlargement of the lymph glands or there may not. Cases without glandular enlargement have been described by Reed,[7] Houston,[8] Donovan,[9] Dudgeon,[10] and others. Secondly, the leucocytosis may be extreme or of only a very moderate extent, the total number of white cells not exceeding that frequently seen in an inflammatory leucocytosis. And in the third place, such leucocytosis, whether of a marked or of a moderate grade, may be

[2] Cabot: Clinical Examination of the Blood.
[3] F. Taylor: Transactions of the Clinical Society, 1904, p. 46.
[4] Diseases of the Blood, Nothnagel's Encyclopædia, p. 555.
[5] Brit. Med. Jour, 1905, vol. i., p. 404.
[6] Goulstonian Lectures, 1904.
[7] American Journal of the Medical Sciences, 1902, p. 653.
[8] Meeting of British Medical Association, Oxford, 1904.
[9] Brit. Med. Jour., February, 1905.
[10] Transactions of the Pathological Society of London, 1905.

accompanied by extensive increase in size of the lymphatic glands or by the absence of glandular enlargement. The commonest type of acute lymphæmia is that in which there is a general enlargement of the glands associated with an extreme leucocytosis, the predominating cell being the large lymphocyte. In some cases with a high grade leucocytosis, however, the small lymphocyte is in excess and this may be associated or not with general glandular enlargement. On the other hand, in those cases in which there is a comparatively slight leucocytosis the predominating cell is, as far as we know, always the large lymphocyte.

The varieties of lymphæmia may be conveniently expressed in a tabular form thus:—


1. Chronic.
All cases show
(1) General enlargement of glands.
(2) Excessive leucocytosis.
Predominating cell the small lymphocyte (common type).
Predominating cell the large lymphocyte (rare type).
2. Acute.
Glands generally enlarged (common type).
Glands not affected (rare type).
With extreme leucocytosis (common type).
With moderate leucocytosis (rare type).
Predominating cell the large lymphocyte (common type).
Predominating cell the small lymphocyte (rare type).
Predominating cell the large lymphocyte.

A point which we consider of great pathological importance in cases of acute lymphæmia is the fact that there may be a marked general enlargement of the lymph glands or there may be little or no such enlargement. Moreover, the cases in which there is no increase in size of the lymph glands may show an enormous increase in the number of lymphocytes, generally of the large variety but occasionally of the small, while those cases, such as the two we now report, in which a well-marked and extensive glandular enlargement is present may show only a comparatively mild leucocytosis, the diagnosis in such cases depending largely on the high percentage of lymphocytes and being confirmed post mortem by the condition of the marrow and perhaps also by changes in the viscera. Normally, the lymphocytes are derived from three sources: the spleen, the lymphoid tissue throughout the body, and the marrow. In lymphocythæmia these three sources of origin may all be involved or one only, that one, which appears most important and the only one indeed the involvement of which seems absolutely necessary in the production of the disease, being the bone marrow. Ewing[11] has found that the distribution of the lesion in the marrow in cases of lymphæmia is very irregular and in the early stage appears to be focal rather than diffuse. In one acute case he found the marrow of the ribs and femur to be normal, while that of the bodies of the vertebræ showed the usual lymphoid hyperplasia. We think it highly probable that the condition of the blood bears a much more direct relation to the extent and degree of the marrow change than to the hyperplasia of the lymphoid structures. Another point in favour of this view is the fact that in chronic lymphæmia the cellular hyperplasia of the glands is found to be largely replaced by an increase of connective tissue, such change not being accompanied by any decrease in the number of lymphocytes in the blood.

The great lymphocytosis in the cases here reported was out of all proportion to that found in childhood and in the secondary anæmias common thereto. It will be remembered that at birth the mononuclear elements constitute from 50 to 75 per cent. of the total leucocytes and that at the third year the mononuclears and the polymorphonuclears are present in about equal numbers; from the eighth to tenth years and onwards the proportions assume the adult type. The blood changes in these cases were also more marked than those found in lymphadenoma, for in this disease there is frequently but little change from the normal. In the later stages it is true there may be anæmia and a relative lymphocytosis but the red cells do not as a rule fall below 3,000,000 nor does the lymphocytosis reach 50 per cent.

[11] Ewing: Clinical Pathology of the Blood, second edition, p. 235.

It has been stated that occasionally the leucocytes and the characters of the blood in lymphadenoma become those of a lymphatic leukæmia, though Ewing maintains that "the statement that pseudo-leukæmia may pass into leukæmia rests upon rather uncertain observations." With this we agree and we incline to the belief that those cases in which such a change is said to have occurred were in reality instances of lymphæmia from the beginning, it not having been fully realised that lymphæmia may occur without any marked increase in the number of white corpuscles.

Anæmia infantum pseudo-leukæmica (von Jaksch), a disease which must not be confounded with lymphadenoma, or Hodgkin's disease, on account of the similarity of the name with pseudo-leukæmia, a synonym of the latter, likewise differs from the cases which we now record. In von Jaksch's anæmia the spleen is much enlarged and the liver moderately so, while the lymph glands do not show an increase in size comparable to that in leukæmia. The red cells are much diminished and show variations in size and shape and the deficiency in hæmoglobin common to other anæmias; but characteristic features are an excessive number of nucleated red cells and in the graver stages the presence of megaloblasts. The leucocytes number from 20,000 to 50,000 or more, the mononuclear cells forming a slight majority, while the eosinophiles may be increased up to 6 per cent.

Such diseases as scurvy and purpura hæmorrhagica can be passed over. Clinically the cases did not resemble these affections and the blood showed greater changes than are found in them. In purpura hæmorrhagica the red corpuscles are as a rule only slightly, if at all, diminished and scarcely ever fall below two and a half millions unless there is very severe hæmorrhage, while the leucocytes generally show a distinct increase, the polymorphonuclear variety greatly predominating.[12] In scurvy likewise the blood changes are those of a secondary anæmia and present no definite characteristics.

CASE 3.—A girl, aged six years, first attended the out-patient department in June, 1903, with a history of having recently become pale and being very liable to vomiting, though since an attack of measles two years previously, which was immediately followed by severe diarrhœa, she had been getting thinner and weaker and had been very excitable. She had always been a "delicate" child and attended the hospital for wasting when seven weeks old and subsequently for rickets till the age of 18 months. For the next one and a half years her health was good but at the end of that time she had an attack of pneumonia; this was followed about a year later by the measles above referred to which confined her to bed for four weeks. In the family there were three younger children, two of whom had attended for wasting but all were then well except the youngest but one who suffered with a chronic cough. The mother was anæmic but otherwise healthy and the father enjoyed good health. There was no history of any disease in the family. When first seen the child was of small physique and delicate-looking, though by no means ill nourished and showed a slight grade of anæmia. The abdomen was "large and podgy" but no visceral abnormality was discovered either there or in the chest. The bowels were constipated. She was put on a course of cod-liver oil and malt but the former had to be omitted as it induced vomiting. In December, 1903, a slight attack of bronchitis supervened. The abdomen was still large but the child's colour was good and she was said to be getting thinner. Her weight at that time was 31 pounds 2 ounces and during the next two months she was proved to lose a few ounces. During the spring of 1904 she had some return of the cough but shortly after ceased to attend until September. Her general condition had then considerably deteriorated. She was markedly anæmic and thinner than before, having gained only 4 pounds in weight during the previous eight months. A loud hæmic bruit was audible all over the cardiac area; neither the abdominal viscera nor the lymphatic structures were enlarged. The patient complained of pain in the eyes at night and occasional headache. Mr. Sydney Stephenson was accordingly asked to examine her and he reported: "Refraction = 1·25 D. of hypermetropia; fundus normal. The pallor of the fundi and of the blood in the retinal arteries and veins recalls that of some cases of leukæmia I have

[12] Ewing (Clinical Pathology of the Blood) describes a non-infectious idiopathic purpura hæmorrhagica which is probably identical with hæmophilia. In this condition the lymphocytes may rise to 90 per cent. (Engel), 80 per cent. (Ehrlich).

examined. No neuritis. No tubercles of the choroid." A blood count on Oct. 4th showed 1,200,000 red cells and 6400 leucocytes to the cubic millimetre and hæmoglobin 30 per cent.

As the child was losing weight she was admitted into the hospital on Oct. 10th. All the mucous membranes were blanched and she was very pale. The temperature was 103·6° F. and the pulse-rate was 160 and of good quality. The tongue was very furred. Nothing beyond the hæmic bruit was found in the chest but the abdomen was very distended and the spleen could be just felt. The temperature fell to normal in two days but rose irregularly to about 100° for another fortnight, after which it settled down. The pulse also became slower and averaged 100 beats a minute. The blood a week after admission showed only 816,000 red cells and 3400 white to the cubic millimetre, with hæmoglobin 20 per cent., but 11 days later it had improved to 1,695,000 erythrocytes and 6800 leucocytes, with hæmoglobin 42 per cent. Vomiting frequently occurred in spite of all treatment and proved unconnected with the administration of arsenic which was tried, as it did not cease when iron was substituted for a time or increase when the arsenic was resumed. At the end of a six weeks' stay in hospital she was slightly improved and had gained 2¼ pounds, her weight 10 ounces. As it was thought that she was not doing very well in hospital she was sent home and kept under observation as an out-patient, being sent again to Brighton a little later. After she had been there for a few weeks her mother was telegraphed for as the child was very ill and the vomiting was severe and brought her straight back to the Evelina Hospital. The patient was a good deal collapsed after the journey and intensely anæmic. Her lips were bluish-white in colour and the hands and ears were of a dead waxy appearance. She was admitted again (Sept. 15th, 1905) and the anæmia was found to be of such an extreme grade that there were only 827,500 erythrocytes to the cubic millimetre, the hæmoglobin being 15 per cent.; the leucocytes, on the other hand, were abundant, numbering 9200. Her condition improved, so that by Oct. 6th the red corpuscles and percentage of hæmoglobin were nearly doubled. The patient was bright and cheerful in herself but was frequently very sick without any feeling of nausea. The vomiting occurred quite suddenly and was generally preceded by a cough. The spleen was not palpable but the lower edge of the liver could be just felt. Both ears were discharging. The bowels, as was generally the case, required aperients. The urine was normal. The vomiting was intractable though for a time it seemed better after lavage

TABLE III.—GIVING DETAILS OF THE BLOOD EXAMINATION IN CASE 3.

Date.	Red cells per c.mm.	White cells per c.mm.	Hæmoglobin per cent.	Polymorphonucleare per cent.	Small lymphocytes per cent.	Large lymphocytes per cent.	Large mononuclears per cent.	Transitionals per cent.	Eosinophiles per cent.	Myelocytes per cent.	Basophiles per cent.	Nucleated red cells per 100 leucocytes.	Remarks.
1904.													
Oct. 4th ...	1,200,000	6400	30·0	—	—	—	—	—	—	—	—	—	Colour index = 1·25.
Oct. 18th ...	816,000	3400	20·0	55·0	37·0		3·0	—	0·5	—	4·5	—	Colour index = 1·22.
Oct. 29th ...	1,696,000	6800	42·0	—	—	—	—	—	—	—	—	—	Colour index = 1·23.
Dec. 30th ...	1,576,000	7600	36·0	56·5	24·5	10·0	6·0	—	0·5	2·5	0·5	0·5	Colour index = 1·17.
1905.													
Feb. 21st ...	3,760,000	8600	72·0	—	—	—	—	—	—	—	—	—	Colour index = 0·95.
April 20th ...	2,048,000	7500	32·0	—	—	—	—	—	—	—	—	—	Colour index = 0·78.
June 14th ...	2,000,000	6000	40·0	—	—	—	—	—	—	—	—	—	Colour index = 1·0. Microcytes and megalocytes. Poikilocytosis.
Sept. 21st ...	827,500	9200	15·0	61	21·6	7·0	7·0	0·6	1·0	1·6	—	2·0	Colour index = 0·906. Microcytes and megalocytes. Poikilocytosis and polychromasia.
Oct. 6th ...	1,600,000	5020	28·0	—	—	—	—	—	—	—	—	—	Colour index = 0·87.
Oct. 18th ...	1,480,000	4000	28·0	—	—	—	—	—	—	—	—	—	Colour index = 0·94.
Nov. 28th ...	774,000	4370	18·0	59	7·6	22·2	3·4	3·4	2·8	1·0	0·6	0·5	Colour index = 1·16. One megaloblast seen.

Average colour index = 1·043.

then being 29¼ pounds. She was sent away to Brighton on Nov. 21st but the vomiting became worse and on Dec. 28th she was readmitted, having lost three-quarters of a pound in weight. The abdomen was still distended but there was no evidence of fluid and the spleen could not then be felt. The blood count showed only a slight inferiority to that made on Oct. 29th. The temperature was unsettled, rising quite irregularly at intervals, and occasionally reaching 103°. No cause was found for these rises and they apparently did not cause the patient any inconvenience. A seven weeks' course of hæmatogen, iron, and arsenic brought about some improvement and an increase in weight of nearly 3 pounds. The blood on Feb. 21st, 1905, showed 3,760,000 red cells and 8600 white per cubic millimetre and hæmoglobin 72 per cent.

The patient was sent home but three weeks later returned with increased vomiting and was readmitted on April 14th. The general condition was much the same but the blood had deteriorated to 2,048,000 red cells and 7500 white per cubic millimetre; hæmoglobin 32 per cent. The temperature continued very irregular and the vomiting persisted at intervals in spite of treatment. In June the spleen was palpable again, two inches below the ribs, and the blood elements had further slightly diminished in number, though the colour index had improved and the weight had risen to 31 pounds of the stomach, a proceeding which the child greatly resented. Towards the end of October the red cells had again begun to diminish in number so she was once more sent home. She weighed 29½ pounds. During November the vomiting was rather less frequent but she became more anæmic and dropped to 28¼ pounds in weight. On Dec. 1st she was much worse and very lethargic and was admitted for the last time. The face and lips were almost white; the eyelids were puffy, and the hands and feet were œdematous. The respirations were laboured and 30 to the minute, the pulse was 104, and the temperature ranged from 101·4° to 102°. The blood count showed only 774,000 red cells and 4370 white per cubic millimetre and hæmoglobin 18 per cent. (See Table III.) The temperature dropped to normal but the child died on Dec. 5th, 1905, having complained of pain in the abdomen and back during the previous day.

Necropsy.—At the post-mortem examination the body was found to be fairly well nourished. Rigor mortis was slight and post-mortem staining was not present. The muscles were brownish-red and the fat was a deep yellow. The lungs were very œdematous. Both pleural cavities contained a large quantity of clear fluid. There were some recent adhesions about the base of the left lung. The bronchial glands were large and pigmented. The pericardium contained nearly three ounces of clear fluid. In

both sides of the heart there were small quantities of pale watery blood; there were no clots. The heart muscle was pale and flabby, with well-marked tabby-cat striation on the muscular papillares. The right ventricle was moderately dilated. The valves were normal. The mucous membrane of the stomach was coated with tenacious mucus but otherwise the stomach wall appeared normal. The small intestine contained a considerable amount of rather thick bile-stained mucus. The mucous membrane was reddened, especially the edges of the valvulæ conniventes. In the large intestine the mucous membrane was reddened in patches. The opening of the appendix into the cæcum was plugged with a small mass of inspissated fæcal matter. The wall of the appendix was in a state of catarrhal inflammation, the proximal half of the appendix being distended with very foul-smelling mucus. The mesenteric glands were slightly enlarged and red. The liver weighed 26 ounces and was very pale in colour. The gall-bladder was distended with dark-coloured bile. The spleen weighed five ounces and was of firm consistence. The kidneys were large, each weighing three and a half ounces; the cortices were not enlarged and the capsules stripped easily. The connective tissue throughout the body was decidedly œdematous. The blood was pale and watery and its coagulability was considerably diminished. Films were made from the bone marrow of a rib. The cells showed a considerable amount of degeneration, many of them staining badly and being difficult to identify. The proportion of non-granular to granular cells appeared to be normal. Nucleated red cells were fairly, but not excessively, numerous, the majority of them being megaloblasts. Of the non-nucleated red cells many were macrocytes. Corpuscle-carrying cells were not present.

This case presents many points suggestive of pernicious anæmia, though the occurrence of this disease so early in life is very unusual, for out of 240 cases collected by Ehrlich only one, or 0·4 per cent., occurred below the age of ten years. The patient was intensely anæmic and during the 14 months that the blood was under observation the red corpuscles were above 2,000,000 for only one period of five months and towards the end they showed considerable variations in size and shape. Nucleated red cells were present in small numbers and in the last count one definite megaloblast was seen. As in pernicious anæmia, rapid changes in the quality of the blood and in the general condition of the patient were marked features. On two occasions the number of erythrocytes fell considerably below 1,000,000 and in the last count of all to 774,000. On the two earlier occasions the numbers were doubled in such short periods as 11 and 15 days, the general condition at the same time noticeably improving after the patient had seemed to be in a very bad way. The hæmoglobin value throughout was high, the average of all the estimations being 1·043. The leucocyte count, on the whole, was low and showed no correspondence with the number of red corpuscles, the highest number, 9200, being found at one of the periods of most marked diminution in the red cells.

An alternative diagnosis which was at one time put forward was that of splenic anæmia, but the spleen was never at any time very large and frequently it could not be felt at all. In splenic anæmia, also, the red corpuscles very rarely show the same marked diminution as in pernicious anæmia and the poikilocytosis is much less marked. Erythroblasts are rare and when present are of normal size and above all the colour index is low. The leucocytes are diminished in number with a slight relative increase in the lymphocytes, and basophiles are very scanty. Taken altogether the blood of this case conforms much more closely to the type of pernicious than to that of splenic anæmia.

The child was shown at a meeting of the Society for the Study of Disease in Children on Oct. 20th, 1905, when it was suggested that the anæmia was due to abdominal tuberculosis, but the necropsy showed no sign of tubercle anywhere.

It is possible that the anæmia supervened upon the chronic gastro enteritis, and if this be so is it to be considered as merely of a secondary nature? It seems to us that the blood changes were too severe to be accounted for in this way, and for the reasons given above we incline to the belief that the case was one of primary anæmia presenting many characteristics of the pernicious type.

A CONTRIBUTION TO THE PLASTIC SURGERY OF THE RENAL PELVIS.

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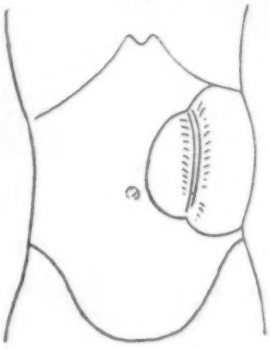
CONSERVATISM in renal surgery has succeeded a somewhat prodigal tendency in regard to the renal tissue. This is partly the result of increased experience in the surgery of renal disease but above all to a wider knowledge of the pathology and of the recuperative power of the renal tissue after apparently irreparable damage. Plastic operations upon the ureter and the kidney pelvis are performed with greater frequency with the object of saving the kidney, even if it be damaged. The plastic surgery of the renal pelvis has not yet emerged from the earlier stages of its development and I have therefore ventured to give publicity to the following case, which appears to me to possess some points of interest.

The patient, an active young woman accustomed to the muscular exertion of massaging patients, was under the care of Dr. H. Stanley of St. Leonards and Dr. A. M. Ross Sinclair, and was referred to me on account of a moveable tumour on the left side of the abdomen. She related the following history. Seven months before I saw her she had a sudden attack of pain in the left side of the abdomen and indicated a spot above, and to the left of, the umbilicus a little below the margin of the ribs (anterior renal pain region). The pain was severe and shooting through to the back at the angle of the last rib and the erector spinæ muscle and caused sickness. She stated that just before the pain came on she had carried a heavy box downstairs. The pain was relieved by rest in bed and she remained perfectly well for about three months, when she had an attack of influenza and the same pain returned. This was followed by another attack four months later and the last attack came on four days before I saw her. These attacks of pain were all similar in their course. The first attack had some apparent connexion with lifting a heavy weight, the second had no such preliminary exertion, and the third attack came on at night when the patient was in bed. The pain always commenced in front and passed through to the back. It did not track along the ureter. The kidney region was tender during and after the last two attacks. There were no

FIG. 1.



increased frequency of micturition and no change in the urine during or after the attacks. Dr. Stanley discovered a tumour in the left loin. This did not increase in size nor was there any history of its sudden disappearance.

On examining the abdomen the left side was seen to be more prominent than the right and was firmer and more resistant. There was some bulging at the side of the left loin with the patient lying on the back, but none posteriorly. On palpation a large smooth mass of the size of a child's

head could be felt in the left lumbar region. The mass had smooth rounded surfaces and no edges or notch. It was oval in shape and appeared to consist of two portions marked off from each other by a vertical groove. (Fig. 1.) With the patient lying on the back it did not quite reach the umbilicus and the lower limit was just above the iliac crest. The mass occupied the renal area and could be readily palpated between the hands placed at the costal angle and on the front of the abdomen. It moved freely with respiration. It could be pushed in all directions. When pushed fell away from the left loin towards the right side. There were absolute dulness on percussion over the portion of the swelling to the left of the groove and comparative dulness over that part to the right of the groove. There was no tenderness or aching. The mass was firm but not hard. No fluctuation could be obtained. The temperature was normal. The urine contained some phosphates, a trace of albumin, and there were a few pus cells and granular and hyaline tube casts. With the cystoscope the bladder was healthy and both ureteral openings were normal. No

FIG. 2.

FIG. 3.

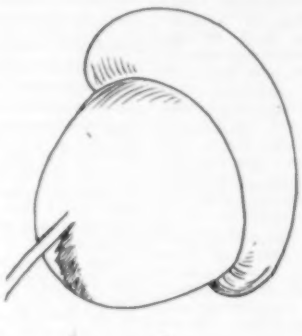


FIG. 4.

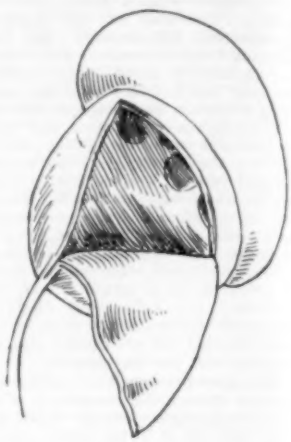


FIG. 5.

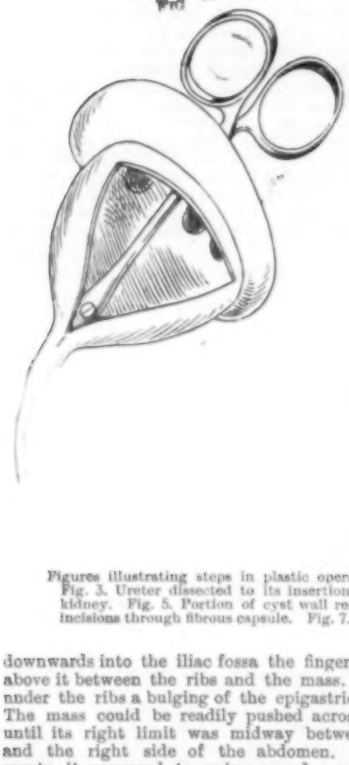
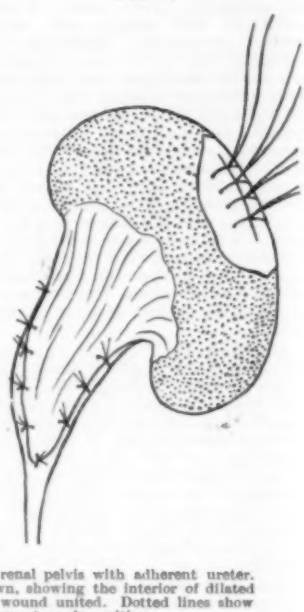


FIG. 6.

FIG. 7.



Figures illustrating steps in plastic operation upon the renal pelvis. Fig. 2. Distended renal pelvis with adherent ureter. Fig. 3. Ureter dissected to its insertion. Fig. 4. Triangular flap of cyst wall thrown down, showing the interior of dilated kidney. Fig. 5. Portion of cyst wall removed and forceps in position. Fig. 6. Edges of wound united. Dotted lines show incisions through fibrous capsule. Fig. 7. Capsule stripped and stitched over wound. Kidney sutures in position.

downwards into the iliac fossa the fingers could be slipped above it between the ribs and the mass. On pushing it up under the ribs a bulging of the epigastric space took place. The mass could be readily pushed across the middle line until its right limit was midway between the umbilicus and the right side of the abdomen. In all its movements it appeared to swing round a pedicle fixed above the umbilicus. It could not be forced down into the pelvis. On lying upon the right side the mass efflux could be seen from the left side. With a Luys separator a small quantity of urine was obtained from the left side and this contained a trace of albumin, pus, and epithelial cells, and a few granular and hyaline casts. The right urine showed no albumin but a few casts were present. The diagnosis of moveable kidney with hydronephrosis was made.

The kidney was exposed by a moderate-sized oblique lumbar incision and presented in the wound; with

little difficulty it was brought out on to the loin and this condition was found. The kidney was attached to a large bladder-like cyst which was recognised as an enormously distended pelvis. The kidney itself was dilated to a moderate degree. The whole mass, cyst and kidney, was of about the size of a child's head. The ureter was picked up below the mass and traced upwards. It was small and showed no signs of dilatation or thickening. The upper end lay upon the surface of the cyst and was firmly bound down to it by adhesions for about one and a half inches. (Fig. 2.) The renal pedicle was long and allowed the mass to lie upon the loin without putting any strain on the vessels, so that the necessary manipulations of a plastic operation were carried out in comfort. The ureter was dissected up off the surface of the cyst until its junction became perpendicular (Fig. 3) and a longitudinal incision was then made from the point of union along the posterior surface of the ballooned pelvis almost to the margin of the kidney hilum. The cyst collapsed and allowed a careful survey of the interior of the dilated pelvis and kidney; a bougie was inserted into the upper end of the ureter and passed readily down to the bladder. There was no narrowing at the point of junction between ureter and pelvis. The incision in the wall of the pelvis was continued into the ureter by slitting this tube for about a quarter of an inch. A large triangular portion of the posterior wall of the renal pelvis was now cut away, the base of the triangle lying about a quarter of an inch from the margin of the kidney hilum. (Fig. 4.) An incision was made in the convex border of the kidney about its mid point, and a long pair of artery forceps was pushed through this into the cavity of the pelvis and the conical point inserted into the upper end of the ureter. (Fig. 5.) Over this the margins of the wound of the pelvis were then brought together, and a series of interrupted sutures of fine silk was inserted. (Fig. 6.) In this way the lateral angles of the triangle met about one-third of the distance from the renal end of the wound. The kidney itself was bent pole towards pole so that these angles might be approximated, but there was no tension or kinking of the organ, and when all was finished the bend in the middle of the kidney had almost disappeared. The leathery wall of the pelvis did not admit of the application of Lembert or other special sutures, and a series of closely set interrupted stitches passing through the whole thickness of the pelvic wall was used. With the wound closed and the kidney held in the position it would eventually occupy the pelvis was now reduced to a hollow cone which passed without constriction or angle into the ureter. An incision was now made through the fibrous capsule of the kidney in the form of an ellipse around the wound in its convex border and further incisions from this along the convex border to each pole. The capsule of the kidney was then stripped from the anterior and posterior surfaces of the organ, leaving a margin of about three-quarters of an inch around the wound undisturbed. The capsule from the anterior surface was clipped away at the margin of the hilum, but that from the posterior surface, still attached along the posterior margin of the hilum, was turned over so as to cover the wound in the pelvis, and a few retaining stitches were placed along the edges. (Fig. 7.) Four stout strands of catgut were passed through the kidney substance so as to bring the edges of the kidney wound together, being so placed that the points of entrance and exit were within the surface area undenuded of capsule. These were tied and the ends left long. The kidney was then returned to the abdomen. In turn each of the ends of catgut were threaded on curved needles and brought through the muscles at the upper and lower edges of the lumbar wound and tied so that they formed a part of the series of muscle sutures. Thus each catgut suture passed through the kidney substance uniting the edges of the kidney wound and then one end passed through the muscles of the upper margin of the lumbar wound, while the other end passed through the muscles of the lower part of the wound and the ends were again knotted. The muscle layers were then united by catgut sutures and the skin wound was closed, leaving a rubber drain down to the posterior surface of the kidney. The drain was removed in 36 hours as there was no trace of urine on the dressings. Healing was aseptic and the recovery from the operation was uneventful.

On examining the patient eight months after the operation the kidney was found in the position it had been given at the operation. It was small and moved with the respiratory movements. There was no pain or other urinary symptom and no tenderness was experienced on handling the kidney. The patient was unwilling to submit to a further separation of the urines so that I had to forego the analysis of the secretion of the restored kidney.

One or two points merit brief notice. The condition was undoubtedly primarily a moveable kidney in which the ureter had become kinked and fixed to the surface of the pelvis by adhesions. The mechanism of this is not difficult to reconstruct. The moveable kidney swings around its vascular pedicle so that the hilum ever faces the vascular attachment, being directed upwards and to the middle line or directly upwards. The ureter thus acts as a drag upon the swing. The wonder is rather that kinking so seldom occurs and that the kink is not more often perpetuated by the formation of adhesions. Probably the ureter escapes from the fact that the swing is seldom a direct one, like that of a pendulum, and a certain amount of rolling over is added which to some extent releases the ureteral bend. If the pelvis has once become distended the bent ureter lying upon its surface becomes fixed there by adhesions and further distension increases the obstruction to the outlet by pressing upon the tube. In this case there was certainly no true stricture formation at the upper end of the ureter such as has been found in some similar cases, nor was there any vascular cord over which the ureter was bent.

In regard to the plastic operation upon the kidney pelvis but little need be said. So far as I am aware, the method of excision of a large triangular portion of the kidney pelvis in order to reduce its capacity has not been previously employed.[1] The covering of the wound with kidney capsule is an additional novelty. Further, the method of fixing the kidney in this case is one which seems to me to have something in its favour. It is a combination of the decortication with the non-decortication methods which I am inclined to believe has some of the advantages of both. The object of leaving an area of renal capsule through which the sutures enter and emerge is the prevention of cutting out of the suture. Again and again I have met with the difficulty of the cutting of sutures through a friable decorticated renal substance, but since adopting this method of leaving an island of capsule I have had no further trouble on this account. The stripping of the rest of the capsule insures all the advantages which are claimed for the methods of decortication. I employed at one time a method by which the capsule was stripped forwards and backwards from a median vertical incision along the convex border of the kidney. By rolling these pads of capsule up along the anterior and posterior margins of the hilum a roll was obtained through which sutures might be passed and fixed to the upper and lower margins of the lumbar wound. This method, or something similar, has, I find, been used by Mr. W. H. A. Jacobson, who did not, however, strip the capsule from more than half the surfaces of the kidney. I have experienced certain disadvantages with this procedure. The sutures if drawn tight will project the denuded kidney into the lumbar wound and it is sometimes a matter of difficulty to find a sufficient muscular covering for the organ. This implantation of the kidney among the lumbar muscles appeared to me to have the advantage of securely fixing the organ in place, but the weakening of the abdominal wall was considerable and was not, I thought, sufficiently compensated for by the increased surety of fixation. But another consideration decided me to abandon the method. It is, I believe, of the utmost importance to explore these kidneys by incision, for, in some of them at least, the symptoms result rather from some renal disease than from the actual mobility of the organ. Such being the case, an incision and exploration of the organ are a safeguard against the serious fault of overlooking an important disease while attending to what in such a case is a minor trouble. An incision in a decorticated kidney, as I have said, is a difficult wound to close on account of the friability of the tissues denuded of capsule. For these reasons I have abandoned the method and prefer that which I have described.

It is an important point that the catgut sutures which close

[1] In a recent paper (Bulletin of the Johns Hopkins Hospital, June, 1906) Kelly states that he has twice employed "plication in hydronephrotic renal pelvis." The method has already been described by Israel. It is open to the objection that if any permanent kinking or stricture exists it remains untreated, and it is a difficult matter, without opening the pelvis and actually probing the ureter, to say whether or not there is some narrowing of the uretero-pelvic junction or an oblique inset of this tube.

the renal wound serve also to sling the kidney, for the insertion of additional sutures is thus avoided. The fixed kidney in this, as in most of these methods, is in an unnatural position, lying more obliquely and much lower than in its normal state. This is, however, in my experience no disadvantage, for I have not seen any resulting sign of obstruction to the ureter in the cases in which the kidney was fixed in this position.

Queen Anne-street, W.

Reviews and Notices of Books.

Manual of Medicine. By THOMAS KIRKPATRICK MONRO, M.A., M.D. Glasg. Second edition. University Series. London: Baillière, Tindall, and Cox. 1906. Pp. 1022. Price 15*s.* net.

ON the appearance of the first edition of this excellent manual of medicine we had the pleasure of reviewing it very favourably. The second edition is now before us and has been brought quite up to date by the author. Fresh articles have been written on tropical splenomegaly, trypanosomiasis, and piroplasmosis; additional illustrations have been introduced and one figure showing the cortical centres on the lateral aspect of the hemisphere has been re-drawn, so as to represent the most recently accepted teaching.

The volume opens with the subjects of fever and of the specific infectious fevers. In writing of typhoid fever we do not find any mention of the advisability of giving urotropine as a measure of preventing infection by the urine. The researches of Dr. P. Horton Smith might with advantage be alluded to in a future edition. The section on relapsing fever is well up to date, the investigations of Dr. Dutton and Dr. Todd receiving due mention. Lobar pneumonia is, of course, placed amongst the infectious fevers. The author, in the treatment of this affection, we are sorry to see, does not mention antimony. In writing of tuberculosis he evidently does not agree (and here he is in consonance with most authorities) with the dictum of Koch that there is little or no danger from tuberculous cattle. The section on this disease is very complete. The treatment advised in cholera is not altogether satisfactory. For instance, the author recommends the diarrhœa to be checked by astringents, whereas there can be little doubt, we believe, that the treatment by purgatives is by far the best, and, indeed, this was recognised a few years ago by the Royal College of Physicians of London. No mention is made of the late Sir George Johnson's lucid theory of collapse. Yellow fever is handled in a very satisfactory manner and the importance of the rôle played by the mosquito is fully set forth. Hamilton Wright's investigations on beri-beri receive their due appreciation and the latest researches on yaws are set forth. The author's successful attempt to keep his manual up to date is well exemplified by his treatment of the subject of tropical splenomegaly, wherein the recent views of Major W. B. Leishman, R.A.M.C., Major C. Donovan, I.M.S., Captain L. Rogers, I.M.S., and Lieutenant S. R. Christophers, I.M.S., are all set forth. In the account of trypanosomiasis and piroplasmosis the student will find all the most recent researches detailed.

Section II. is devoted to constitutional diseases. The theories concerning gout are detailed, special attention being paid to the researches of the late Sir William Roberts. In the treatment of osteo-arthritis the administration of guaiacol carbonate might perhaps have been more strongly recommended. The chapter on diabetes is excellent and nothing of importance is therein omitted.

In Section III. we find an account of the diseases of the circulatory system. We cannot congratulate the author on the diagrams showing the relation of the valves but the illustration of the relations of the heart and great vessels to the lungs and thoracic walls is excellent. The varieties of the pulse are very lucidly set forth. In that dread disease, ulcerative endocarditis, antistreptococcic serum is rightly advised. In the section on the various valvular lesions the author, as regards prognosis, considers that mitral incompetence is the least dangerous; next comes aortic stenosis, then mitral stenosis (probably); and, finally, aortic incompetence, thus not completely agreeing with the views of Sir William Broadbent.

Passing on to the subject of aortic aneurysm, we are glad to see that the author draws attention to the method of treatment by the hypodermic injection of a 2 per cent. sterilised solution of gelatin. He, however, advises the gelatin solution to be given by the rectum in view of the fact that many cases of tetanus have followed this plan of treatment. The account of the different varieties of corpuscles of the blood in various diseases is succinctly written and should not cause in the mind of the reader any confusion, which cannot invariably be stated concerning such accounts. The different diseases of the blood are also described in a very luminous manner, the only affection that might be more fully set forth being scurvy, as there is no mention here of any of the theories that have been put forth to explain it, such as those of the late Dr. S. H. Ralfe or of Sir A. E. Wright. The sections devoted to the respiratory, digestive, and renal systems next follow and here the article on Abscess of the Liver is not quite up to date as no mention is made of the sub-hepatic abscess of Cantlie.

The section on diseases of the nervous system is the best in the volume. There is an excellent diagram representing the sensory and motor neurons. The whole subject—one that generally is extremely difficult to the student—is so well and lucidly set forth that it is a pleasure to read it. The diagrams employed are excellent and the descriptions of the various diseases leave little or nothing to be desired. The author is to be congratulated heartily on this section of the work. Finally, the volume ends with an account of the diseases of the skin, of the various intoxications, and of the diseases due to parasites. In the chapter on sunstroke we note that no mention is made of the actinic theory, an omission of some importance with respect to the successful prophylaxis founded on this theory.

A Manual of Pharmacology. By WALTER E. DIXON, M.D. Lond. Illustrated; 86 figures in the text. London: Edward Arnold. 1906. Pp. 451. Price 15*s.* net.

THE object of this manual is to give the student a simple account of the science, albeit an experimental science, of pharmacology; the work is not a text-book on materia medica, while the introduction of therapeutics is only to serve to illustrate the pharmacology. The art of therapeutics can only be dealt with properly at the bedside, and the author thinks that the student should not be burdened by committing to memory the composition of various pharmaceutical preparations. We agree with him here, for the modern student is already overtaxed by an unnecessary amount of such futile labour.

After some general statements the author deals with alcohol and its action, and he considers that the direct evidence is almost overwhelming in support of the theory of Schmiedeberg—that this drug does not exert any direct stimulant action on the central nervous system but that on the contrary it depresses from the beginning. Anæsthetics, narcotics, and hypnotics are next dealt with, and some of the actions of these drugs are illustrated by excellent tracings. A more or less specific group of drugs which act on nerve endings is considered, including those which excite (colchicine, pilocarpine, muscarine, and so on) or depress the activity of nerve endings (belladonna, stramonium, and hyoscyamus). Colchicine, in addition,

has a marked effect on leucocytosis. A very full account is given of drugs that act on certain nerve cells, such as coniine, nicotine, and their allies. In this connexion the diagrams and work of Langley are introduced with useful effect to help to lighten the path of the struggling pharmacologist, whose knowledge of physiology and the complexities of the ganglionic nervous arrangements may be somewhat rusty. The fruitful subject of drugs that produce convulsions, whether they are discharged from the cerebrum, bulb, or cord, is also treated mainly from the point of view of the pharmacologist.

The vegetable hypnotics, represented by opium and its derivates and the local anæsthetics, are fully and intelligently treated, and bring the student to the details of the group of diuretics, and of cardiac tonics, when, by a sudden transition, we arrive at Chapter XII. on certain drugs which excite sensory nerve endings, such as aconite, veratrine, and stavesacre. Ergot and drugs altering the calibre of the bloodvessels take up two more chapters, and between these chapters and the chapter on the coal-tar or aromatic group (including antipyretics, antiseptics, and disinfectants) is the chapter on cinchona bark. Purgatives, cholagogues, astringents, and simple bitters follow, and then we proceed to a full account of the drugs affecting respiration.

Next comes a consideration of essential oils and drugs acting on the skin. This leads up to the theory of ions, and thus onwards to the action of various bases, acids and alkalies, the group of the halogens, and the heavy metals, such as arsenic, antimony, mercury, and iron. Chapter XXX. (pp. 402–11) deals with anthelmintics and drugs used to kill parasites; and then the student finds himself studying emollients, demulcents, sweetening and colouring agents, to wind up with information about ferments, cod-liver oil, vegetable toxins, internal secretions, serum therapy, and antagonism.

We have briefly enumerated the subjects treated in their order, but it should be noted that at the end of each group or chapter there is added a materia medica dealing with the "preparations" of the drugs the action of which is discussed. Many tracings, well printed, afford testimony to the value of the graphic method as applied to pharmacology, while a considerable number of excellent schemata such as teachers frequently use will be found helpful. The work is a compact review of all the leading facts and theories in pharmacology which will be welcomed by teachers of this subject. Perhaps the student will view the additional knowledge from a different standpoint, but the old traditions of materia medica in its wide sense are gradually being replaced by accurate knowledge of the actions of drugs, and as the student has to learn the newer knowledge, the sooner the old teaching is given up the better, so that space may be found in his mental pigeon-holes for facts of greater value.

Text-book of Physiology for Medical Students and Physicians. By W. H. HOWELL, M.D. Illustrated. London and Philadelphia: W. B. Saunders and Co. 1905. Pp. 905. Price 18*s.* net.

PHYSIOLOGY is a continually growing science and nothing shows it more than the steady output of new text-books on this subject or the steady flow of new editions of what are regarded as standard works. The book before us, by the eminent professor of physiology in the Johns Hopkins University, Baltimore, is, we think, a great improvement on the "American Text-book of Physiology" edited by the same author. It is divided into eight sections which deal successively with muscle and nerve, the central nervous system, the special senses, blood and lymph, circulation, respiration, digestion and secretion, heat production and regulation, and reproduction. Of general physiology in the ordinary sense there is practically none, nor is it necessary, for the medical student as a rule has learned the broad principles in his biological course. Where all is so good and so tersely put it is difficult to say which of the eight sections is the best, but perhaps those on the special senses and the nervous system show the author at his finest. The subjects are concisely treated, yet with a lucidity that makes reading a pleasure. A small yet sufficient number of references to literature are given for the sake of those who may wish to follow any particular subject more in detail, while occasional references to works of historical importance are inserted. An appendix dealing with proteids and their classification and diffusion and osmosis closes the work and brings the text to nearly 900 pages. The number of illustrations is 272 and some of them are full-page plates in colour taken from standard works.

This is one of the best recent text-books on physiology, and we warmly commend it to the attention of medical students who desire to obtain by reading a general all-round, yet concise, survey of the scope, facts, theories, and speculations that make up its subject matter. Moreover, the physician also will find much in its pages that will throw new light on many problems of disease.

Principia Therapeutica. By HARRINGTON SAINSBURY, M.D. Lond., F.R.C.P. Lond., Physician to the Royal Free Hospital and to the City Hospital for Diseases of the Chest. London: Methuen and Co. Pp. xi.–244. Price 7*s.* 6*d.* net.

IN his prologue Dr. Sainsbury reminds us that the master thinker, Plato, said that "an unexamined life is not worth living." The author would apply the same criticism to medical practice; and for this reason, and because we are in peril of being engulfed in the flood of new remedies, he here sets down certain considerations in the hope that they may prove of service "to those who have undertaken to navigate the ship of health." His book is one of general principles and as such is valuable, while he justly points out that "details without guiding principles yield but a busy foolishness." The book is the work of a scholarly mind and makes most pleasant and instructive reading; it is true, however, that it is written chiefly for the man of leisure, while the busy worker will feel that much that is so true and so well said in this book might have been put into a very much smaller compass. Perhaps it might, but as a literary performance the present shape of the volume is justified. The book is divided into a Prologue, 12 chapters, and an Epilogue. Of the 12 chapters, the first is written in the form of a dialogue between a physician and a pathologist, the scene being in a dead-house. The second and third chapters deal with curative and preventive medicine, the fourth chapter is headed "Primum Non Nocere," and the fifth "Secundo Prodesse." In the sixth chapter the combining of remedies, therapeutic complexity, reinforcement, and antagonism are discussed. In the remaining chapters the prescription, dietetics, habit, and the order of treatment are considered. The final chapter is headed "Imponderabilia" and has for its motto, "Non pane solo vivet homo"—a motto which may be regarded as a good sub-title for the whole book. We will close this brief notice of a most interesting volume by quoting two characteristic passages in illustration of Dr. Sainsbury's turn of mind. In writing of death he says: "Forbidding enough 'his images and storied aspects,' whilst we contend with him for the mastery, but his victory assured and accepted there follows peace, and for the wounds which he has himself inflicted, it is his custom to administer an unfailing opiate—in a drowsiness we take our departure." He writes that "we should bring to the bedside a great hopefulness, a determined optimism, but if, thus armed, the futility of the strife is irresistibly borne in upon us, then we should put aside our remedia as

cures, and ranging ourselves upon the side of Death, make easy the couch with such solatia as may offer. He would come as a friend, let us not compel him to hostility, since he must prevail." We welcome this book as the work of a scholar and an erudite physician.

LIBRARY TABLE.

Phlebitis and Thrombosis: the Hunterian Lectures. By WARRINGTON HAWARD, F.R.C.S. Eng., Consulting Surgeon to St. George's Hospital. London: Baillière, Tindall, and Cox. 1906. Pp. 88. Price 5*s.* net.—In these Hunterian Lectures Mr. Haward gives us an able and scholarly survey of the present position of our knowledge of phlebitis and thrombosis. For some years he has been making and collecting observations relating to thrombosis and he has found that the remoter effects of the disease do not seem to have attracted much attention from surgeons. These collected lectures are especially valuable because the author devotes considerable space to the treatment of the conditions he describes; though his suggestions would be even more valuable to the practitioner if the prescriptions for the various applications recommended were set forth in full. But consideration of the time at his disposal probably dictated the scope which the lecturer laid down for himself. Mr. Haward dwells on the smallness of our knowledge of the vital chemistry and physiology of the blood and remarks that "here is a wide and fertile field for our advancing physiological chemists." The book is illustrated with eight excellent plates.

Traitement des Hémorragies Puerpérales. Par le Docteur G. KEIM, Ancien Interne des Hôpitaux de Paris et des Maternités de l'Hôtel Dieu, Saint-Antoine, et Laribosière. Paris: Vigot Frères. 1905. Pp. 235. Prix 3 fr. 50c.—As the author truly remarks in his preface, the treatment of the hæmorrhages occurring in connexion with childbed requires a very perfect knowledge of what is to be done and promptitude in carrying out whatever measures the medical man may select. With a view to assisting the latter in coming to a conclusion what to do in such cases, and how to do it, Dr. Keim has collected together in this book the different methods of treating hæmorrhage when it occurs during pregnancy, during labour, or in the puerperium. As a necessary preliminary to the study of the artificial arrest of bleeding the author devotes a chapter to the anatomy of the pregnant uterus, and this is followed by one on the defences of the organism as a whole against hæmorrhage. He next discusses the various medicinal remedies and modes of treatment, and then considers the best methods to pursue in the different forms of hæmorrhage which may be met with. Lastly, he describes the means of treating the various conditions which ensue as a consequence of the loss of large quantities of blood from the body. The book presents within a small compass a considerable amount of information, and should prove of value to students and practitioners acquainted with the French language.

Health Talks about Children: An Appeal for the Child. By JOHN GRIMSHAW, M.D., B.S. Lond., D.P.H. Cantab. Birkenhead: Brimmell's Printing Works. 1906. Pp. 83. Price 1*s.* net; postage 2*d.*—The health and lives of infants and young children are so needlessly sacrificed by avoidable mistakes that any additional way of diffusing information must be welcomed. Dr. Grimshaw's book is written with the "good intentions of helping mothers to care for their children and of inspiring others to help the mothers," and is dated from the "Dispensary for Children, Conway-street, Birkenhead." The teaching is all very obvious; for instance, he insists that "it cannot be too strongly impressed upon the mother that many of the symptoms and sicknesses of the infant are better treated by careful feeding or by modifications in the food than by drugs. Most children who resist this form of treatment, or that by suitable measures of hygiene, are not amenable to healing by medicine." The book is divided into six chapters, or "Health Talks," as the author designates them, and an appendix which is a valuable part of the book. In the appendix carefully drawn up rules are set forth for the feeding and bringing up of children, and the mother is advised "What to do and what not to do" in terms that should make her avoid many omissions and transgressions. The sixth "talk" is headed "Consider the Child" and is an appeal to the social reformer. Dr. Grimshaw inveighs against the old-fashioned babies' bottle and advises that we should follow the steps of France and certain States of the American Union where the sale of such bottles is illegal. The book is quite a sound collection of approved facts presented in a way which ought to convince the mother and be very helpful to her.

The Care of Children. Practical Hints for Mothers and Nurses at Home and Abroad. By ROBERT J. BLACKHAM, D.P.H. R.C.P.S. Lond., Captain, R.A.M.C. Revised and enlarged edition. London: The Scientific Press, Limited. Pp. 84. Price 1*s.* 6*d.* net.—The author tells us in his preface that many readers of the first edition of this little book suggested that he should prepare an enlarged edition which would appeal to a wider circle of readers than that for which the "Hints" were originally intended. A study of the report of Mr. T. W. N. Barlow, the medical officer of health of Bootle (Liverpool), which was published in 1905, has induced him to comply with the suggestions made to him. Captain Blackham entirely concurs in Mr. Barlow's view that it is by the education of mothers and nurses alone that the dark pall of ignorance can be dispelled, only in this way can the problem of the proper feeding of children, the most important of all questions affecting the well-being of humanity throughout the civilised world, be efficiently dealt with. The book is clearly intended for the mother and the nurse and has been prepared from the points of view both of a medical officer of health and of a family physician. Captain Blackham divides his work into nine chapters as follows: Hints on Food; Hints on Drink and Medicines; Hints on Clothing; Hints on Cleanliness; Hints on Rest and Exercise; Hints on Infectious Diseases; Hints on the Nursery; Hints on Nursery "First Aid"; and Hints on Nursery Cookery. We have examined this little book carefully and find it thoroughly sound. It is a collection of truths and experiences by which, if studied by mothers and nurses, the readers will be assisted to rear healthy children. The author does not pretend that he has discovered anything new but he has given us a most useful collection of truths in regard to children expressed in good English and arranged in a convenient way.

Physical Efficiency. By JAMES CANTLIE, M.A., M.B. Aberd., D.P.H. R.C.P. Lond. With a Preface by Sir LAUDER BRUNTON and a Foreword by Sir JAMES CRICHTON-BROWNE. London and New York: G. P. Putnam's Sons. 1906. Pp. xxviii.-216. Price 3*s.* 6*d.*—The author has intended to present a popular review of the deleterious effects of town life upon the population of Britain and to give suggestions for their arrest. The importance of the subject is vouched for by topical and curious quotations from lectures at Exeter Hall and at the Parkes Museum of Hygiene, from *Punch* and other papers, from Shakespeare, and from the English Mr. Winston Churchill. The style is emphatic and picturesque, which means to say that it is well calculated to arrest the attention of persons not in the habit of looking deeply into what they read. We find

entirely sensible all that the author says of the value of fresh air in towns, of the physique of boys and girls, of clothing, and of exercise. Mr. Cantlie feels strongly on the subject of infant feeding and is somewhat hard upon the monthly nurse who recommends that the mothers should give up feeding their children. It is always unsound to attribute motives in the course of an argument, and we think that Mr. Cantlie goes a little too far in suggesting that our nation is being hurled to destruction through selfishness on the nurse's part and the desire to be free from the mother's interference. We are glad, however, to see the condemnation of the infant's "comforter" (the solid indiarubber teat), though it may be doubted whether it is really the constant cause of adenoids. On the subject of dancing as a mode of exercise Mr. Cantlie desires that we should learn its significance, and as an example he analyses the various figures in the now neglected quadrille. With the same intention the author has much to say in favour of gymnastics and gymnasium drill, while the postscript speaks of the physical efficiency of the Volunteers and the importance of developing this force instead of reducing its numbers. There can be no doubt of the immense national importance of physical efficiency, and for those who must be approached without circumlocution, without unnecessary detail, and without any assumption by the author that they are familiar with physiology or physiological literature Mr. Cantlie's book should be quite serviceable. Well-written prefatory remarks will serve to impress the audience aimed at with the great interests involved in an organised attempt to improve the national physique.

JOURNALS AND MAGAZINES.

The Liverpool Medico-Chirurgical Journal.—With the July issue, as stated in the preface, this journal "is presented under those broader auspices which we feel convinced are necessary to its professional success and financial stability." Its editor is Dr. John Hay, assisted by a strong editorial committee with Sir James Barr as chairman. This number runs into 331 pages, of which 308 are practically original matter, derived chiefly from the proceedings of the Liverpool Medical Institution. Medicine, surgery, gynæcology, and pathology, besides special branches, are all represented by valuable contributions. We can only allude to the article by Dr. William Carter on the Use of Small Doses of Potassium Iodide and to that by Mr. John H. Watson on Polycythæmia Vera, with a note on an instrument for estimating the viscosity of the blood (a description of which was published in THE LANCET of July 14th, p. 89), in the medical section; and to those on Intraperitoneal Rupture of the Bladder and on Internal Derangement of the Knee Joint, by Mr. R. W. Murray and Mr. W. Thelwall Thomas respectively among the surgical papers. We have already commented on a new theory of female genital activity, by Dr. W. Blair Bell,[1] in which the uterus is regarded as giving rise to an important secretion.

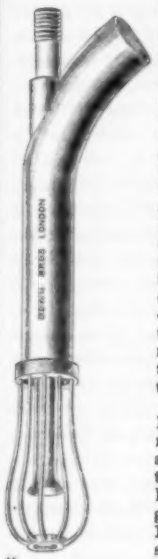
The Medical Chronicle.—In the July number Professor G. A. Wright deals with the Nomenclature and Classification of Diseases of the Joints and proposes a new scheme of arrangement of these conditions, many of which seem as yet too little understood to admit of definite classification. A paper by Dr. David Drummond contains some interesting observations on symptoms met with in cases of heart disease, and a note by Mr. E. D. Telford records a case of Cancrum Oris in which recovery took place after injection of diphtherial antitoxin.

[1] THE LANCET, August 4th, 1906, p. 311.

New Inventions.

A TWO-WAY PERITONEAL IRRIGATOR.

IN spite of the weighty and widespread opinion in favour of dry swabbing in purulent peritonitis, as opposed to irrigation with normal saline solution, I am still of opinion that the latter method is the better, provided one can irrigate without forcing infective fluid into non-infected areas. That is practically impossible by the ordinary methods of irrigation. At my instigation Messrs. Down Brothers, Limited, have made the instrument here depicted, which, I think, permits, indeed favours, localised flushing without infecting non-infected areas. The instrument consists of a central delivery tube, made bell-shaped at its distal end so as to dissipate the force of the injected fluid. The egg-whisk arrangement, made of strong smooth wire, prevents coils of bowel pressing around the mouth of the exit tube and thus obstructing the outflow of the irrigating fluid and at the same time allows irrigation of the adjacent parts. The exit tube surrounds the delivery tube at its proximal end and the exit area is several times greater than the sectional area of the delivery tube. The exit tube is continued laterally by a stiff rubber tube of sufficient length to reach a receptacle at the side of the table. When this rubber tube is filled with fluid a strong syphon action is obtained. The advantage of this is evident. If by any chance the suction draws intestine between the wires of the "whisk" part gentle nipping of the rubber part will tend to remedy the tendency. The instrument can be taken to pieces for cleaning purposes.



A few weeks after Messrs. Down Brothers had made the instrument for me I was much interested to find that a somewhat similar device had been thought of and put into practical shape by Dr. Joseph A. Blake of New York ("Surgery, Gynæcology, and Obstetrics," May, 1906). I venture to think that the instrument figured here is superior to his and will give even better results than he has obtained. By the use of such an instrument much time, manipulation, and mechanical insult of the peritoneum are saved, thereby lessening shock. There is not the same tendency for the bowel to protrude as with the usual method of irrigation. There is infinitely less danger of carrying infection to uninfected areas. The irrigation may be carried out through a small incision if that be thought desirable. It will indicate, as Dr. Blake points out, the extent of the infection if one watches the condition of the returning fluid as the various peritoneal recesses are successively washed out.

H. M. W. GRAY, M.B. Aberd., F.R.C.S. Edin.

Aberdeen.

FLEECY MATERIAL FOR WET-BANDAGING.

THE Sandown Company of Stanford-street, Nottingham, has sent us a sample of a new kind of bandage which is said to be used extensively by veterinary surgeons for the wet-bandaging of the legs of horses, and the suggestion is made that these bandages might sometimes prove useful in medical or surgical practice. The sample which we have received is of varying thickness. One portion, which is about three and a half feet long and three and three-quarter inches wide, consists of a double thickness of a soft fleecy material; the fleecy portion then comes to an end and the bandage is continued for a further distance of about four feet in a material resembling the leg of an ordinary cotton stocking woven circularly, so that it is everywhere smooth, soft, and of double thickness, without any possibility of fraying out at the edge. An extraordinary power of retaining moisture is claimed for this bandage and it is said to have been found beneficial in the treatment of sore-throats and sprained joints.

THE LANCET.

LONDON: SATURDAY, AUGUST 11, 1906.

The Neglect of Science.

IF the presidential address delivered before the British Association for the Advancement of Science at York last week did not contain any startling originalities or fresh facts, it was at least an acceptable synopsis of the present position of scientific work and a useful review of the labours of scientific men for the past quarter of a century. Professor E. RAY LANKESTER must have felt that the particular developments of scientific research which he chose to outline were probably well known to the majority of his hearers, so that it was at the risk of trying their patience that he traversed fields of discovery more or less remote from that with which his name is closely and honourably identified. In his sketch of the advances made in the various branches of science he devoted more attention to the wonderful and oft-told story of radium, of the acquisition of new elements, of their decay, of the discovery of helium, and so on, than to such subjects as the progress of our knowledge of cell substance, the discovery of new kinds of animals or plants, the recent developments in geological science, or the thesis that the phagocytes are our arms of defence against infective germs. Professor LANKESTER'S point of view in science is, of course, that of the biologist and naturalist, and while he spoke lucidly on subjects with regard to which he repudiated any claim to authority, he referred to the workers in these fields in the spirit, as he said, "of a younger brother full of fraternal pride and sympathy in the glorious achievements of the great experimentalists and discoverers of our day." Professor LANKESTER asked the forbearance of his audience for choosing this course, a course which necessarily deprived his words of originality. It is not difficult to guess the considerations which prompted him to sum up not what has been going on merely in one workshop of science but in them all, yet we cannot but regret his action. That the history of science from beginning to end was, in spite of many difficulties, one clear record of advancement was the outcome of Professor LANKESTER'S address; we would rather have received from a teacher of such force and humour a less obvious message.

He was, however, able to found a sound moral lesson upon the acknowledged progress made by science in all directions in recent years. "Where," he asked, "is the corresponding advancement of science in that signification of the word which implies the increase of the influence of science in the life of the community, the increase of the support given to it, and of the desire to aid in its progress, to discover, and then to encourage and reward, those who are specially fitted to increase scientific knowledge, and to bring it to bear so as to promote the welfare of the community?" It is the fact that science is not gaining advancement in regard to public and official consideration and support. It is only too obvious that the claims of science are being ignored by Ministers of State and by others in authority, while the public must be ignorant of the relations of science to the public weal, or popular representatives in Parliament and in office would not so often be wholly destitute of scientific knowledge. The failure of the public and of our leaders of industry to realise the immense practical importance of scientific research is a serious menace to the welfare and prosperity of the country. In many instances the people do not appear to understand the real nature and object of scientific inquiry; they regard it as a kind of hobby pursued by cranks for amusement, or by a glorified class of conjurers who intend to get rich upon patent rights; they divorce it altogether from serious purposes. When the fact is plainly brought home that people are dying by thousands from preventable disease it might be thought that generous support would be given to the organisation of research designed to alleviate the ill. The reverse prevails; neither the work nor the worker receives any large measure of public sympathy, and all endowment is left to a few public-spirited individuals. The public never realises that the labourer in the field of science is worthy his hire. Honours, it is true, await the discoverer, but what a number of investigations there must be which are fruitless because of the lack of monetary support. Medical science has a stronger claim perhaps than any other province of research on the generosity of the public, and yet how niggardly is the response to all appeals for funds to carry out the work of combating disease by scientific methods.

Readers of THE LANCET will thoroughly endorse the view of Professor LANKESTER that if the people of this country wish to make an end of infective and other diseases they must take every possible means to discover capable investigators. They must discover them and employ them, and if good result is to be made at all certain it is probable that where a pound or so of public money is now spent it will be necessary to spend thousands. We do not forget the munificent gifts to science which have been made on private initiative, and which have been productive of great benefits to humanity; but a less intermittent and a more princely supply of money is needed if the causes of preventive medicine and pathological research are to be organised on a fitting basis. Nothing short of the annual allocation of a generous sum of money out of the public purse will serve the purpose, and the public should learn that it is a fundamental truth that on the successful prosecution of scientific research depend after all the health and welfare of the community.

The Notification of Pulmonary Tuberculosis.

THERE is now a very considerable number of towns in England in which pulmonary tuberculosis is notifiable in a voluntary sense, the notifier receiving the same fees as those paid under the Notification Act. In only one town, that of Sheffield, is such notification of pulmonary tuberculosis compulsory, and here the sting is withdrawn from the "compulsion" by the circumstance that the Act rendering the disease notifiable also provides that persons suffering from

this malady shall not be subject to any of the disabilities under the penal clauses of the Public Health Act, 1875, or other sanitary Acts. This latter is a wise and, in our view, necessary exception, but we believe that there are still some who see no objection to dealing with pulmonary tuberculosis in the same fashion as it is customary to deal with small-pox. Those who think in this way would have a case of notified pulmonary tuberculosis confined to his home or to a sanatorium until the treatment adopted or the intervention of death should set him free again, but the bulk of public and of professional opinion is against this extreme view. But modified notification, especially in the larger towns, appears to be meeting with a fair measure of success, and where this is the case the fact is doubtless due to the circumstance that the medical officer of health recognises the absolute necessity for caution and discretion in the matter. But in order that notification may meet with genuine success the coöperation of the medical practitioner is essential, and if the profession generally feels that the information which it furnishes to the health officer is being abused, and is leading to unjustifiable hardship to the patient, there must be difficulties in inducing the medical practitioner to notify. We mention this because, as far as we can judge from the material at present available, there is, perhaps in a few isolated cases, a disposition on the part of sanitary authorities to press matters in the same fashion as is necessary in dealing with the highly infectious diseases, such as small-pox and typhus fever. We are glad to see that medical officers of health are recognising the impossibility of such an attitude.

But granted the principle of modified notification of pulmonary tuberculosis, there is still some difference of opinion as to procedure. To notify a case of pulmonary tuberculosis because there is a suspicious dulness at one apex is altogether unjustifiable, there being no danger to the public from such a case. We note, therefore, with pleasure in connexion with the coöperation of the medical practitioner with the health officer, that in the case of Birmingham, where voluntary notification was adopted last year, the medical officer of health (Dr. J. ROBERTSON) has pointed out in his current annual report (after referring to the fact that although a considerable number of cases have been notified among the artisan class comparatively few have been notified from the middle and upper classes) as follows: "It will be recognised, however, that among the middle and upper classes such notifications are not necessary because in the majority of cases the patients already receive the necessary instructions in the way of preventing them from becoming sources of infection to others." Although in a sense this raises a somewhat invidious class distinction and puts a heavy burden, as it were, upon that class which is least able to bear it, the distinction is, we think, a thoroughly logical one. Clearly also Dr. ROBERTSON does not contemplate that cases of pulmonary tuberculosis with no expectoration shall be notified, since in drawing attention to the facilities obtaining at the University of Birmingham for the bacteriological examination of sputum he observes: "From experience elsewhere I think it advisable that such an examination should be made in most of the cases you intend to notify." The desirability of differentiating between cases in which there is expectoration and those in which there is none ought now to be widely recognised. As regards Birmingham, again, we notice with satisfaction that in setting forth the objects which the health committee has in view, when inviting medical practitioners to notify suitable cases of pulmonary tuberculosis, Dr. ROBERTSON places in the forefront the fact that the information obtained will enable the committee to deal with many of the housing conditions which contribute so largely to the causation of the disease, while the state of the workshops and other trade conditions which influence the spread of the disease will also come under notice. In all this Dr. ROBERTSON is exhibiting, we think, a statesmanlike attitude, for if it is possible to direct some of the enthusiasm in favour of a crusade against tuberculosis, which is now abroad in this country, towards the improvement of the housing conditions of the poorer classes, we venture to predict that pulmonary tuberculosis will decline more rapidly than has been the case in England and Wales for very many years past. And with the decline in this disease, through action set in motion against overcrowding and allied conditions, we should also see a marked improvement in the health and morals of the people in other directions.

But to return to the advantages of some system of modified notification, we gather from the last annual report of Dr. T. ORME DUDFIELD, the medical officer of health of the borough of Kensington, that he, too, would limit notification to those cases having expectoration, since he expresses his adherence with the view of Professor KOCH that notification of consumption is necessary only where, owing to domestic conditions, the affected persons are sources of danger to people about them. This differentiation between "open" and "closed" tuberculosis has long been recognised in France, and the importance of insisting upon it in this country was recently remarked upon by Dr. C. THEODORE WILLIAMS and Dr. H. T. BULSTRODE in their joint report on the Paris Congress on Tuberculosis to the Lord President of the Council.[1] We see, too, by a circular recently issued to the profession in Kensington that Dr. DUDFIELD contemplates the consent of the patient to the notification, and in the event of the practitioner expressing a wish to that effect no visit will be paid to the house of the patient by a member of the sanitary staff. The circular in question adds that there will be no interference with the patient as the result of notification, either at his home or in connexion with his employment. In these circumstances the medical practitioners of the Royal borough will, we feel sure, heartily coöperate with the medical officer of health. We believe that the success which has attended voluntary notification in Liverpool for several years past is due to the fact that Dr. E. W. HOPE, the medical officer of health, has adopted an attitude very much on the same lines as that indicated above. It must be remembered also that in whatever circumstances pulmonary tuberculosis is notified the difficulties of prolonged attention to cases will be great; as Dr. J. NIVEN of Manchester points out in his annual report for 1905, to sustain household visits month after month, perhaps for years, becomes very trying for all concerned, demanding great tact and management from the visitor as well as judgment on the part of the persons visited. But we

[1] THE LANCET, June 23rd, 1906, p. 1774.

are not now writing upon the general utility of notification. Our object has been to accentuate the importance of a differentiation between "open" and "closed" tuberculosis, because if the distinction between the cases that will and the cases that will not (or probably will not) become sources of disease in their environment is properly regarded, the system of notification will be much more clearly understood by the public—which means that the work of both medical officer of health and of the general practitioner will be much simplified.

The Policeman's Risks.

IT has often been said of the profession of the law that it brings those who follow it into contact with some of the worst aspects of human nature and, as a natural consequence, leads them to think but badly of their fellow creatures. Our contemporary the *Law Journal* may perhaps be held to furnish an example of this kind when, in a sympathetic paragraph upon the risks incurred by policemen in the execution of their duties, it speaks of the force generally as being "unpopular." The paragraph further tells us that from 250 to 300 constables are so severely handled every year as to be kept upon the sick list for more than a week, that many of them receive injuries of a permanent character, and that the cases referred to are not a tithe of the whole, a statement which we can only interpret as meaning that injuries involving less than a week's sickness are received every year by some 3000 members of the force. If this be true, and with no official figures before us we can only hope that it is an exaggeration, the truth seems to indicate an almost criminal neglect on the part of the Home Office in not making better provision, by increased numbers or by different arrangements for the patrolling of dangerous districts, for the security of a conspicuously able and trustworthy body of public servants, long known to be weak in relation to the size of the district committed to its charge and to the enormous value of the property which it is called upon to protect. The combined metropolitan and city police districts cover an area of about 449,000 acres, or 700 square miles, and the rateable value of the metropolitan area, without the City, is £50,000,000 sterling, an amount which, of course, does not include the almost incalculable wealth contained in London and suburban dwelling-houses. The police-rate for this area is less than 3*d*. in the £. Alike for the protection of property and for the protection of the police themselves an increase of the force is urgently required. In many outlying portions of the district the number of men on duty is insufficient to afford protection from pilferers or burglars and in some of the centres of hooliganism or of crime the number is insufficient to secure the safety of the constables employed.

We cannot, however, agree with the *Law Journal* in regarding either the individual police constable, or the force to which he belongs, as "unpopular" in any proper or extended sense of the word. He is naturally unpopular with the thieves and the ruffians whose misconduct it is his duty to restrain; but by the enormous majority of the population he is regarded as a friend and protector. In the eyes of foreign visitors his ubiquity almost eclipses the traditional glories of the seldom seen "Lormaire" and eastern potentates are said to have described him as representing the ideal of beneficent despotism. He raises his hand and the whole traffic of Piccadilly is arrested for the safe passage of Betsy Jane and "his Majesty the baby." His uniform and unfailing civility, his kindliness to foreigners and provincials, his chivalrous care for the weak, the aged, and the infirm, are so much matters of course in London thoroughfares that those who constantly traverse them have ceased to wonder at conditions which are scarcely to be met with elsewhere, but which Londoners have come to accept as part of the ordinary amenities of life. Our contemporary contrasts the popular view of the policeman with the popular view of the soldier, whose march through the streets is escorted by crowds of admiring ragamuffins, and pronounces the policeman to be an object of "secret dislike." Even in the vilest neighbourhoods, when a policeman has been assailed by numbers, how often do we read that his whistle has been blown for him by some courageous girl or woman of the locality who has herself sometimes been made to suffer for her interference. We must admit that neither the individual policeman nor the procession emerging from the station on the way to duty is regarded as a street exhibition of enthralling attractiveness, but surely this depends chiefly or entirely upon the familiarity of the spectacle. The true relations between the force and the industrial classes of the metropolis can never be better seen than during the occasional progresses of "Sons of the Phœnix" and similar bodies when these are bent upon "demonstrating" against somebody or something in Hyde Park. The good-natured tolerance of the constables and the perfect readiness of the procession to obey orders and to submit to a control which will manifestly promote its arrival at its destination are generally evidences of perfect goodwill and appreciation on both sides, the constabulary respecting freedom and the processionists respecting legal and wisely exerted authority. We even doubt whether the lady "suffragettes," if that be the right name for them, would hesitate to admit in their cooler moments that the police in Cavendish-square had behaved with great forbearance under repeated provocation.

Thanks, in great measure, to the continuous endeavours of the St. John Ambulance Association, nearly the whole of the metropolitan police force has received instruction in rendering first aid to injured persons and has in this way acquired considerable practical knowledge of some aspects of the rudiments of surgery. Such knowledge might, it is evident, be in many circumstances misapplied for the benefit of those possessing it and would be invaluable to men who were disposed to exaggerate the severity of the injuries which they had received, or otherwise to practise any form of malingering. In the whole history of the force nothing is more creditable than the almost complete absence of any tendencies of this kind and the almost universal desire on the part of sick or injured policemen to return to duty at the earliest possible moment. In a body amounting, in all ranks, to about 18,000 men there must, of course, be occasional exceptions; but the general tone and tendencies of the force are absolutely hostile to them and the peccant individuals, as a rule, are too speedily eliminated to have any opportunity of doing mischief to their

colleagues. The figures cited by the *Law Journal* and the general conduct of the force in relation to the injuries which so many of its members are called upon to sustain are alone sufficient to afford abundant reason for giving increased protection to the police, not only by an extended system of double patrolling in dangerous districts but also by a greatly increased severity of punishment for any ruffians by whom constables may be injured. The fact that plenty of men are willing to face the dangers of the service forms no reason for subjecting them to unnecessary exposure. It is true that the typical policeman is naturally fearless and that his confidence in his own prowess is enhanced not only by the consideration that the whole force of the law is at his back but also by the training which he has received in the arts of defending himself and of overcoming a criminal who resists him. Still, it is the business of his superiors to reduce the risks of his calling to a minimum. Our contemporary mentions as one of them, "the capture of mad dogs," which, although it was once real and serious enough, has now been happily obviated by the wisdom of the Minister who had sufficient courage and common sense to defy the clamour alike of politicians and of the more misanthropic of cynophilists and to apply medical science for the purpose of banishing rabies and hydrophobia from the kingdom.

Annotations.

"Ne quid nimis."

THE LATE SIR SYDNEY WATERLOW.

By the death of Sir Sydney Hedley Waterlow, an ex-Lord Mayor of London, which took place at his residence, Trosley Towers, Wrotham, Kent, on August 3rd, at the ripe age of 84 years, the hospitals of London have lost a friend and the sick poor one who amidst all the turmoil of an exceptionally arduous business life found time to think of their needs As Vice-President of the Metropolitan Hospital Sunday Fund, and as chairman of the Distribution Committee of that Fund, he frequently presided over the meetings at the Mansion House when the Lord Mayor was unable to be present, and the manner in which he conducted the business of the meetings won the hearty approval of everyone, though of quite recent years it had become evident to his friends that the infirmities of age made the duties incidental to the post extremely arduous to him. Sir Sydney Waterlow was the founder of the famous firm of Messrs. Waterlow, Sons, and Co., Limited, stationers and printers, of Great Winchester-street, London, E.C., and for many years identified himself with the municipal life of the City of London. He was elected Lord Mayor in 1872, and was created a baronet in recognition of his services to the State by acting as the host of the then Shah of Persia, who visited England during his year of mayoralty. It is necessary to be middle-aged to remember the extraordinary enthusiasm that was aroused by the first visit to England of "The King of Kings," and the fact that it fell to Sir Sydney Waterlow's lot to welcome the gorgeous Oriental to the capital of our empire would have made his mayoralty memorable. By us, however, that same mayoralty will always be remembered for a totally different circumstance. In 1873 our repeated advocacy of the Hospital Sunday Fund movement, a good example of the possibilities of which existed in Birmingham, attracted the attention of the Lord Mayor, and as a result a consultation was held in the offices of THE LANCET between Sir Sydney Waterlow, Canon Miller, the head of the Birmingham movement, and the late Dr. James Wakley, then editor of THE LANCET, at which was discussed the establishment of a Hospital Sunday Fund for London on the lines of the similar fund in Birmingham. That meeting resulted in the foundation of the Metropolitan Hospital Sunday Fund—a fund with the work of which our readers are so familiar—and for the remainder of his long life Sir Sydney Waterlow never lost his keen interest in the magnificent project with the birth of which he had been so intimately associated. Indeed to his influence and efforts the Fund owes a great measure of its present successful position. Sir Sydney Waterlow was, however, a man of varied interests. On three occasions—viz., from 1868 to 1869, from 1874 to 1880, and from 1880 to 1885—he was a Member of Parliament, sitting first for Dumfries, then for Maidstone, and finally for Gravesend. He was a consistent Liberal throughout his Parliamentary career, and associated himself with many practical projects for the amelioration of the industrious poor. For example, he founded, and was chairman of, the Industrial Dwellings Company, and some years ago he presented Waterlow Park, Highgate, to the London County Council as a place of recreation for the people of London. In recognition of such public benefactions, and especially, perhaps, of his services as treasurer of St. Bartholomew's Hospital, he received from the King the decoration of K.C.V.O. in 1902. He was also a director of the Union Bank of London and of the London, Chatham, and Dover Railway Company, chairman of the governing body of the United Westminster Schools, and chairman of the Income-tax Commissioners of the City. This is a record of extraordinary activity and well-directed energy, and it is not surprising that Sir Sydney Waterlow's death has been felt by very many of all grades in life as a personal and real loss.

A YEAR'S WORK IN THE GYNÆCOLOGICAL DEPARTMENT OF THE KASR-EL-AINY HOSPITAL, CAIRO.

WHEN we take into account the fact that this hospital dates back to the year 1466, that it is of necessity lacking in many of the details of a modern hospital, and that the patients are drawn from the lowest ranks of native Egyptians, whose ideas on the subject of general and personal cleanliness are of the most primitive description, the disadvantages under which the staff have to carry on their work are obvious. For their nursing they are dependent on Egyptian girls trained in the nursing school attached to the hospital under the supervision of an English sister. In spite of these and other drawbacks incidental to the country the success which has been obtained reflects great credit on the surgical staff of the hospital. From a report drawn up by Mr. F. C. Madden, the senior surgeon, and Dr. N. E. Mahforz, assistant gynæcologist, we learn that during the year 1905 151 gynæcological operations were performed, including 55 abdominal sections with six deaths. These operations are performed with all aseptic precautions, silk or silkworm gut being the only ligature and suture materials employed. A considerable use is made of saline transfusion, and castor oil is found the safest and most effective post-operative aperient. Of 16 cases of dilatation for dysmenorrhœa and sterility no less than four of the patients subsequently became pregnant—an important point in a country in which sterility may be a reason for divorce. An interesting case of perforation of the uterus during the operation of dilatation of the cervix is recorded in which the uterus was removed by supravaginal hysterectomy, the patient making a good recovery. Bilharzial

infection of the genital organs is not an uncommon condition in Egypt, mainly, however, confined to the lowest class of women. Extensive vesico-vaginal and other fistulæ are frequent as the result of neglected labours. Ruptures of the perineum, on the other hand, are not common, for labours are often extremely easy, though on account of neglect in abnormal presentations or of contraction of the pelvis, the reverse may occur, in which cases very extensive injuries to the soft parts are met with. Ovarian cysts and fibroid tumours of the uterus usually attain a large size before coming under observation and the operations for their removal are correspondingly complicated and difficult. In the fatal case of ovariotomy there were masses of tubercle in the lungs and similar masses round the pancreas and liver. Of the two fatal cases of hysterectomy one died from a perforated duodenal ulcer, and in the other the bladder was accidentally injured during the operation, owing to the fact that it was much displaced by the tumour. The report indicates that good work is being done in this hospital and the staff are to be congratulated on their results.

MEDICAL MEN AND INDICTABLE OFFENCES.

THE Under Secretary of State for the Home Departmen has forwarded to us the following circular which has been addressed to all chief constables:—

Whitehall, August 6th, 1906.

SIR,—I am directed by the Secretary of State to inform you that the General Medical Council have asked to be furnished with notice of any medical or dental practitioner convicted of an indictable offence. This is done by the Prison Governors when the prisoner is committed to prison; in London, when he is fined, the Metropolitan police report the conviction; and the Secretary of State will be glad if you will give instructions that an intimation of any case coming to the knowledge of members of your force shall be sent to the General Registrar, 299, Oxford-street, London, whenever a fine is imposed on the defendant. I am, Sir, your obedient servant,

The Chief Constables. M. D. CHALMERS.

The keeping the roll of the medical profession free from undesirable characters is part of the duty of the General Medical Council, and it is necessary for that body to take active steps to obtain the necessary information. We do not imply that a conviction for every indictable offence renders a medical man unfit to pursue his profession, yet it is as well that such convictions should be registered by the General Medical Council.

THE HYPODERMIC INJECTION OF PREPARATIONS OF IRON.

IT is universally admitted that salts of iron, in virtue of their astringent and constipating properties, are sometimes badly borne by those persons for whom their use is most directly indicated. The large number of preparations of iron, both official and unofficial, organic and inorganic, in common use by various medical practitioners, and the diverse directions given by different authorities for the treatment of chlorosis and other forms of anæmia, afford an indication of the difficulties encountered. At one time it was recommended to prepare the patient suffering from anæmia and gastric disturbance, to whom iron was to be administered, by a preliminary course of purgatives and stomachics, but it is now more usual to start at once by giving preparations of iron. Later, much was hoped for from the introduction of organic iron compounds, and large numbers of such substances were extensively tried, but pharmacological experiments and clinical experience have agreed in demonstrating that there is little, if any, advantage in their use; indeed, Stockman regards inorganic iron compounds as more effective than organic in the treatment of anæmia, and not a few practitioners of great experience prefer the more astringent preparations to the milder and more bland. Now that the absorption of compounds of iron by the mucous membrane of the upper part of the small intestine has been definitely established and its excretion by the large intestine and the kidney has been traced, the view of Bunge as to the use of iron salts administered by the mouth in chlorosis—that they acted by sparing the hæmatogens or organic iron compounds of the food material from the action of the sulphuretted hydrogen in the bowel—must be regarded as controverted. In view, therefore, of the useful results which have been obtained by the hypodermic administration of other metals, such as mercury and arsenic, it becomes important to investigate whether iron may not with advantage be given by this means. It seems to have been employed in this manner by Rosenthal as long ago as 1872, and since that time various preparations of iron have been used hypodermically. The chief substances which have been employed for this purpose are dialysed iron, citrate of iron, citrate of iron and sodium, citrate of iron and ammonium, and various albuminates and peptonates, but most authorities regard the results obtained as hardly commensurate with the difficulties encountered. The injections are given into the thick tissues of the back and sometimes cause considerable pain unless the reaction is neutral. The solutions should always be freshly prepared and, of course, must be sterile. It should likewise be borne in mind that iron salts are toxic, and that smaller doses should be given hypodermically than by the mouth or rectum. In animals V. H. Mayers and F. Williams[1] observed vomiting, purging, a fall of blood pressure, coma, and death as a result of the action of toxic doses of iron and sodium tartrate, while Kobert and his pupils found that after injection of one milligramme of iron and sodium citrate per seven kilogrammes of weight in man 40 per cent. appeared unaltered in the urine. The possibility of renal irritation as a result of large doses must obviously be kept in mind. For purposes of injection, therefore, small doses only should be given, about 10 or 12 minims of a solution equivalent to from a quarter to half a grain of metallic iron. Da Costa found that a 20 per cent. solution of ferrous manganous citrate could be injected without pain and gave satisfactory results. He recommended 15 minims of the solution as a dose—that is, three grains of the salt. Other salts which have occasionally been tried are the lactate, salicylate, and cacodylate, but on the whole the results, as recorded, are disappointing of iron given by this means and a thoroughly satisfactory substance for injection has yet to be found. Chalhoub gave the chloropeptonate of iron by the rectum, the solution being prepared by the addition of the perchloride of iron to peptone. On the whole, it seems that even with cases of irritability of the stomach the best results are obtained by the administration of preparations of iron by the mouth, and among the many substances at present in use, as a rule some one will be found to be effective. Professor T. Clifford Allbutt[2] states that he has found an old-fashioned French solution of malate of iron tolerated by patients "with queasy stomachs" when other ferruginous drugs are badly borne.

INTERNATIONAL CONGRESS FOR ASSISTANCE OF THE INSANE.

THIS Congress will be held at Milan from Sept. 26th to 30th. The meetings will be held in the Palais de l'Université Bocconi, Piazza del Statuto. In addition to the subjects for discussion proposed by the organising committee, of which Professor Tamburini of Reggio Emilia is president and Professor Ferrari of Bertalia, Bologna, is general secretary, the Congress will also discuss a proposition made by Dr. Frank of Zürich, the object of which is to found an international institute for the purpose of studying and combating the causes of mental diseases. The general subjects proposed for discussion by the

[1] Archiv für Experimentelle Pathologie und Pharmacologie, Band xlii., p. 76.

[2] System of Medicine, vol. v.

organising committee are: (1) The Progress in Assistance for the Insane in Different Countries since 1902 to the Present Time; (2) the Organisation of Sections of Observation, Supervision, and Isolation in Asylums and Colonies and Methods which have given the Best Results; (3) Assistance for Convalescents; and (4) Assistance for the Feeble-minded, Alcoholics, Epileptics, and the Morally Insane. The subjects 1, 2, and 4 will be treated respectively by Dr. W. F. Menzies of Cheddleton Asylum, Dr. C. H. Bond of Ewell Colony for Epileptics, and Dr. W. W. Ireland, Dr. G. E. Shuttleworth, and Dr. Fletcher Beach as representing this country. Other subjects for discussion will be: Out-patient Departments for the "Nervous" and Insane; Popular Sanatoria for the "Nervous"; Economic and Social Results of the Progress of Assistance for the Insane and especially Family Care; and the Function of the State in Assistance for the Insane. An exhibition of plans of asylums will be held; the London County Council will show plans of Long Grove Asylum prepared by its architect, Mr. G. T. Hine, who will also show plans of Kesteven and Hellingly Asylums, on the latter of which a paper will be communicated by Dr. H. F. Hayes Newington, alderman of the Sussex county council, and Dr. F. R. P. Taylor, the medical superintendent. The provincial administration of Milan will afford opportunities to the Congress to visit the asylum of Mombello and other institutions and a tour has been organised to the Italian lakes, with an opportunity to visit the asylum of Mendrisio, Switzerland. The Italian railways will make a reduction of 60 per cent. in the prices on their lines. Those who wish to join the Congress should at once inscribe their names by sending the subscription (20 francs) to the treasurer, Dr. Piero Gonsales, Via Leopardi 14, Milano.

SCHOOL CHILDREN AND HOME LIFE.

THERE is an admirable association in Manchester which provides health lectures for the people and a copy of one of these, delivered by Dr. R. T. Williamson, now lies before us.[1] The object of the lecture is, in Dr. Williamson's own words, "to draw attention to some of the ways in which the health of school children is impaired when school hours are over." The contentions are, of course, mainly written with a view to the requirements of day scholars but in many ways they also concern boarders. Thus Dr. Williamson rightly lays stress upon the necessity for there being a sufficient interval allowed between the conclusion of dinner and the commencement of afternoon school. He points out how if this interval is not sufficiently long the scholars may suffer from indigestion, and are certainly sleepy and unable to fix their attention. This state of matters was common in nearly all schools 30 years ago, and to judge from the following amusing parody of a well-known stanza of Alcman is still in existence at Eton.

ALCMAN IN 2.45 SCHOOL.
ἔυδουσι μὲν διδάσκαλοι,
χέυδουσι μαθητῶν
φυλ' ἀποδειπνίων·
ἔυδω δὲ κἀγώ.[2]

Moreover, we have before us the time table of a very well-known and quite first-class school for girls, in which we note—

1.10 to 1.50, or thereabouts, dinner.
2.10 to 3.40, lessons.

We do not consider that 20 minutes is a long enough interval between dinner and lessons. Another point upon which Dr. Williamson insists is that there are too many home lessons, or what is the same thing too much work to be done out of school hours. On this matter we agree with him. Some amount of preparation out of schools hours there must be, but in most elementary schools we believe that the time thus employed has been reduced to a minimum. At many more advanced schools, however, both day and public schools, the time given up to home lessons or preparation out of schools hours is far too long—that is, if it be added to the hours spent in school. Dr. Williamson's paper contains many other points which are most noteworthy by those who have the care of children. Among them he draws attention to the necessity for ventilation, especially of sleeping rooms. Sleeping with the open window is, of course, most desirable, but in many large towns, notably in London, it is difficult to carry out this procedure on account of the various noises, many of which are due to easily preventable causes.

[1] On the Home Life of School Children in Relation to Education and Health. Price 1d. Manchester: Sherratt and Hughes.
[2] Signa Severa, by R. A. K., Eton College. Spottiswoode and Co., Limited.

THE CAUSE OF SUDDEN DEATH FOLLOWING THE INJECTION OF HORSE SERUM.

THOUGH the injection of the blood serum of the horse into man usually causes no serious inconvenience, yet in a certain proportion of cases it is followed by urticarial eruptions, pains in the joints, fever, swelling of the lymph nodes, œdema, and albuminuria. This reaction, which appears after an incubation period of from eight to 13 days, has been termed by Pirquet and Schick the "serum disease." In exceptional cases sudden death has occurred. In order to throw some light upon the cause of such accidents an important investigation of the subject has been made by Dr. Milton J. Rosenau and Dr. John F. Anderson in the Hygienic Laboratory of the United States Public Health and Marine Hospital Service.[1] They have found that ordinarily horse serum is a comparatively bland and harmless substance when injected into certain animals, but that it is possible to render them so susceptible that an injection of the serum may produce sudden death or severe symptoms. For example, a large quantity of horse serum may be injected subcutaneously or into the peritoneal cavity of a guinea-pig without causing the animal any apparent inconvenience. But if a guinea-pig is injected with a small quantity—e.g., $\frac{1}{10}$th cubic centimetre of the serum—and after the expiration of a certain interval of time is again injected the result will probably be fatal. The first injection of horse serum appears to sensitise the animal in such a way as to render it very susceptible to a toxic principle in the serum. It is probable that on the first injection the proteid in the serum develops "antibodies" in the body of the animal and when these unite or react with the serum given at a second injection a toxic action is set up. It is noteworthy that an interval of from 10 to 12 days must elapse between the first and second injections, corresponding suggestively with the period of incubation of the serum disease noted by Pirquet and Schick, guinea-pigs remaining susceptible a very long time, at least 160 days. Guinea-pigs may be sensitised with very small quantities of horse serum; in most cases quantities varying from $\frac{1}{10}$th to $\frac{1}{100}$th cubic centimetre were used and in one instance one-millionth of a cubic centimetre was sufficient to render a guinea-pig susceptible. It also requires very small quantities of horse serum when given in a second injection to produce poisonous symptoms. One-tenth of a cubic centimetre injected into the peritoneal cavity is sufficient to cause the death of a half-grown guinea-pig, while the same quantity injected subcutaneously is sufficient to produce serious symptoms. The symptoms produced by a second injection are respiratory embarrassment, paralysis, and convulsions, followed by death. They generally come on within ten minutes after the injection and when death results it usually occurs within an hour, frequently in

[1] Bulletin No. 29, Hygienic Laboratory of the United States Public Health and Marine Hospital Service, Washington, 1906, pp. 95.

ess than half an hour, and sometimes within a few minutes. The poisonous principle in horse serum appears to act upon the respiratory centres; the heart continues to beat long after respiration ceases. The toxic action bears no relation to diphtheria and the poison is not toxone. Though guinea-pigs cannot be rendered susceptible by previous injections with bacillus diphtheriæ, or by previous injections with diphtheria toxin, it appears that a mixture of diphtheria toxin and horse serum forms a more potent sensitising agent than horse serum alone. Dr. Rosenau and Dr. Anderson lay emphasis on the fact that diphtheria antitoxin is in itself harmless and plays no part in this poisonous action. The poisonous principle in horse serum is not affected by subjection to a temperature of 60° C. for six hours but it is destroyed at 100° C. in 15 minutes. It is filtrable through porcelain, is not injured by drying, and cannot be separated by precipitation with ammonium sulphate and subsequent dialysis. Serums eight years old are as toxic as those freshly prepared, and their poisonous action is not affected by exposure of the serum to x rays. It is probable that small quantities of horse serum are more powerful than large quantities in inducing susceptibility; in the latter case the guinea-pigs are probably partly immunised at the same time owing to slow absorption of the serum. An active immunity against the toxic principle may readily be established by repeated injections of horse serum at short intervals but up to the present it has not been found possible to transfer this immunity in the blood serum or body juices to another guinea-pig. This investigation has also revealed the remarkable fact that guinea-pigs may be rendered susceptible to the toxic action of horse serum by feeding them with horse serum or horse meat. This opens up an interesting question as to whether sensitive guinea-pigs may also be poisoned by feeding them with the same serum after a proper interval of time. It is suggested that if man can be sensitised in a similar way by eating certain proteid substances some light may be thrown upon those interesting and obscure cases in which the eating of fish and other articles of diet habitually causes sudden, and sometimes serious, symptoms. It is interesting also to note that the susceptibility to the toxic action of horse serum is transmitted by heredity from a mother guinea-pig to its young, a fact which may throw some light upon the well-known hereditary tendency to tuberculosis in children born of a tuberculous parent. Dr. Rosenau and Dr. Anderson allow the possibility that man may not be sensitised in the same way as guinea-pigs. Man reacts to the first injection of horse serum after from eight to 13 days. Guinea-pigs show no reaction as a result of a first injection; both man and guinea-pigs react to a second injection. But the reactions in man and in guinea-pigs differ both in severity and in kind, so that the relation of the foregoing observations upon the guinea-pig to man must await further investigation.[2]

MATERNAL IGNORANCE IN THE MANUFACTURING DISTRICTS.

THE ignorance of the working-class women of the manufacturing districts as to the feeding and care of their infants is almost incredible and is a lasting disgrace to those who have had the planning of their education. Teachers, knowing none too much of such matters themselves, have had to steer by "the Code," even if they wished to impart some useful knowledge, and one of the chief causes of the murderous infantile death-rate has thus been perpetuated. "The other week it came out at an inquest at Gorton," writes a local and valued correspondent, "that the mother had fed her 14 months old child only three times a day, and not at all in the night, with a few tablespoonfuls of milk and barley water. Dr. J. J. O'Shea said that the cause of death was exhaustion due to insufficient feeding, which in other words means death from starvation. The jury thought the parents should be censured and the coroner accordingly administered a mild reproof." The parents in these cases should be made to feel their responsibility in some effectual way. Many of them might do better if they would and they should be taught that neglect and even ignorance of their duty are not only wrong but punishable. Our correspondent shows that infant life is held cheaply in Manchester and its neighbourhood, and no doubt familiarity with a high infantile mortality tends to blunt the feelings. It is cheering, however, to note that more attention is being paid to this subject. The Mayor of Colne has just set an example that many other places and municipal authorities would do well to follow. He will defray the entire expense of a trained nurse, as to salary, uniform, and board, for the term of five years, the duty of the nurse being primarily attention to infants. More common sense in education and a higher moral tone among the mothers would soon reduce the death-rate.

THE MEDICO-LEGAL SOCIETY AND DEATH CERTIFICATION.

AT a recent extraordinary meeting of the Medico-Legal Society, Mr. Troutbeck, the treasurer, being in the chair, the following resolutions were passed unanimously on the motion of Sir William J. Collins, M.P., seconded by Mr. R. Henslowe Wellington:—

1. That the present methods (under Coroners and Deaths' Registration Acts) of ascertaining the fact and cause of death are imperfect, constitute grave public dangers, and call for early legislation, with a view to the amelioration of the law.
2. That a deputation from the Medico-Legal Society wait upon the Lord Chancellor in order to represent to him this view of the society, the deputation to consist of the officers, the ex-president, and the Council. That the learned President (Mr. Justice Walton) be requested to approach the Lord Chancellor as to the reception of the deputation.
3. That a copy of these resolutions be transmitted to the public control committee of the London County Council.

These resolutions were the outcome of opinions expressed at a previous meeting of the society, when there was a discussion on the Methods of Ascertaining the Fact and Cause of Death. A committee was appointed for the purpose of considering certain of the proposals which had been made during the discussion and upon the report of this committee the above resolutions were passed.

STOMATITIS DUE TO A MERCURIAL INJECTION GIVEN FIVE MONTHS PREVIOUSLY.

THE dangers of mercurial injections do not seem to be appreciated sufficiently. When an insoluble preparation is used a toxic quantity of mercury is deposited in the body which usually is slowly absorbed, producing only therapeutic results; but sometimes rapid absorption takes place and serious and even fatal results are the consequence. Of the cause of this rapid absorption little is known and untoward consequences are therefore impossible to foretell. We have recently referred to a fatal case of injection of "grey oil," and also to one in which serious symptoms were checked in the only possible way, by excision of the mercurial deposit.[1] At a meeting of the Société Médicale des Hôpitaux of Paris on June 22nd M. P. Menetrier and M. Bouchard reported a case in which this operation was necessary in a case of stomatitis due to a mercurial injection given five months previously. A woman, aged 38 years, was admitted into hospital on March 22nd, 1906. On admission the breath was fœtid and there was abundant salivation, and mastication was painful. The tongue was furred and swollen; the teeth

[2] The authors state in a postscript that a paper by R. Otto, entitled "Das Theobald Smithsche Phänomen der Serum-Ueberempfindlichkeit," reprinted from Leuthold-Gedenkschrift, Band I., which came to their notice after the galley proof of their paper had left their hands, deals with some of the same problems and contains many results in harmony with their own.

[1] THE LANCET, Feb. 17th, 1906, p. 465.

were covered with tartar; the gums were red and swollen and there was a little pus in the pockets between the gums and the teeth. On the left pillar of the fauces was an ulcer with a greyish coating. On the internal surfaces of the cheeks at the level of the crowns of the teeth were two or three ulcers. There were no gastro-intestinal symptoms and no albuminuria. Mercurial stomatitis was suspected but the patient denied that she had taken mercury. Frequent cleansing of the mouth by the application of oxygenated water and the administration of potassium chlorate were ordered. The odour disappeared, the salivation almost ceased, and the ulcers began to heal. The patient left hospital on April 1st but returned on the 12th with another attack of stomatitis more intense than the previous one. She stated that she had not neglected to wash her mouth daily. The whole body was then minutely examined. In the subcutaneous fat of the right buttock a lump of the size of a hazel nut was discovered and in the left buttock a smaller one. The patient on being questioned stated that she had received an injection in the left buttock in March, 1905, and one in the right buttock in October. The urine was analysed and was found to contain a trace of mercury. The lump in the right buttock was excised and the stomatitis radidly improved. The lump was entirely subcutaneous and on section showed a greyish and yellowish surface hollowed out into little cavities. Microscopic examination showed that the lump was composed of fibrous tissue and that the cavities contained fat, crystals of calomel, and globules of metallic mercury. The delay in the appearance of the symptoms of mercurial poisoning is noteworthy.

A TELEGRAM from the Governor of Hong-Kong, received at the Colonial Office on July 30th, states that for the week ending July 28th there were 5 cases of plague and 6 deaths from the disease. As regards the Mauritius a telegram from the Acting Governor received at the Colonial Office on July 31st states that for the week ending July 26th there was only 1 case of plague reported and that ended fatally.

THE Central Council of the British Medical Association has accepted the invitation of the Western branch to hold next year's annual meeting at Exeter and Dr. H. Davy has been nominated as president-elect. It is more than half a century since the British Medical Association visited Exeter.

AN Order of the Privy Council has been received by the Central Midwives Board continuing the present rules of the Board until Feb. 12th, 1907.

ABORTION FELONIOUSLY INDUCED BY DIACHYLON.

THE LANCET of July 28th, p. 248, contained a report of the trial at the recent assizes at Nottingham of a woman named Wardle charged with selling pills to pregnant women. Wardle was convicted and sentenced to 18 months' imprisonment with hard labour, the judge when passing sentence dwelling upon the serious nature of the offence, and pointing out to the prisoner that it was in his power to condemn her to penal servitude for life.

The case is of importance owing to the manner in which the prisoner's crimes were brought to the notice of the police authorities, and also on account of the nature of the drug used and of the manner in which it assisted in securing the conviction. Under the rules framed by the Central Midwives Board in accordance with the powers given to it by the Midwives Act, "In all cases of abortion a midwife must decline to attend alone and must advise that a registered medical practitioner be sent for," and whenever this is done it has to be noted in the midwife's record, a copy of which is to be forwarded to the local supervising authority (Rules 17 and 19). Further, "In all cases where a registered medical practitioner is not in attendance the midwife shall as soon as possible after the occurrence of a still-birth notify the same to the local supervising authority" (Rule 18). As certified midwives are liable to removal from the roll if they do not obey the rules cases of abortion and still-birth are likely to come under the observation of local authorities and if numerous should secure attention, as, in fact, happened at Nottingham. Uncertified midwives may still attend confinements for hire, so long as they do not hold themselves out to be certified, and they will be able to do so until April 1st, 1907, but after that date no doubt the notification referred to will constitute a more certain safeguard to the public than now. In the recent instance at Nottingham the pills used by the prisoner were roughly made up, varying from one and a half grains to five grains, and those analysed were found to be compounded of diachylon in proportions varying from 50 to 70 per cent., of aloes, and of a coating of boric acid. The women to whom they were supplied were told to take a dose of Epsom salts, fasting, in the morning, followed by four of the pills and by four pills again at night. In these circumstances it is not surprising that many of the women who had recourse to Mrs. Wardle in pregnancy, or supposed pregnancy, developed symptoms of lead poisoning and became very ill, while the frequent occurrence of lead poisoning, accompanied by abortion, attracted the notice of Dr. P. Boobbyer, the medical officer of health of Nottingham. These cases, moreover, were of noticeable frequency in Bulwell, an outlying district of the town, where it was found that a large trade was done in "Mrs. Seagrave's Pills," Seagrave being a trade alias of the prisoner Wardle. Not only were cases of lead poisoning among women of the child-bearing age occurring in extraordinary numbers, but no less than ten in which abortion had also taken place were cited to the local authority in order to prove to it the desirability of taking action.

When once it had been decided that the police should make inquiries the completion of the chain of evidence, by obtaining pills from the abortionist for analysis, by arresting her and seizing a large quantity of them at her house, and by obtaining the evidence of her victims, was not difficult; but the important feature of the case is the manner in which the medical officer of health was enabled to intervene in the interest of the public health confided to his care, owing to the statistics supplied to him under the Midwives Act. These statistics should draw attention to any systematic procuring of abortion taking place in other localities and the fact of lead having been used with such dangerous results at Nottingham may also afford an additional clue elsewhere. This use of the drug, however, either generally or in the form of diachylon, is not common if we may rely on our experience in the analysis of would-be abortifacients obtained in our investigation held in 1898.[1] We must not forget to call attention to the newspaper advertisements, less common now than formerly, but by no means stamped out, by which the quack establishes relations with his victims and which may also serve as a clue to those who seek to detect the criminal. The prosecution of a few newspapers on the ground of their complicity would do a great deal towards diminishing the revenues of the advertising abortionist, although it might not altogether do away with his trade.

One or two points raised in the defence of Wardle at Nottingham may be noted for the guidance of those who may have to meet similar suggestions upon other occasions. A number of witnesses, male and female, were called on her behalf, who swore that they had taken her pills with beneficial results for such ailments as "bad backs, internal pains, and anæmia." The general answer to evidence of this kind is, of course, that it in no way shows that the pills were not also sold with a view to procuring abortion, when they were asked for by pregnant women who desired them for that purpose. The evidence of the defendant herself upon this subject, who swore that she only sold them as "female pills" to be taken in cases of irregular or suppressed menstruation, was a matter for the jury to consider, and in this case it taxed their credulity too far.

[1] Quacks and Abortion, a series of articles on this subject commencing in THE LANCET of Dec. 10th, 1898, p. 1570.

With regard to the use of lead, however, the prosecution, with the judge's approval, exercised their right to call rebutting evidence, and Dr. Boobbyer went into the witness-box to point out that as anæmia was one of the earliest and most constant symptoms of lead poisoning it was inconceivable that lead administered to an already anæmic patient should fail to make him or her worse instead of better, while absence of menstruation is due practically either to pregnancy or anæmia.

Upon other points also arising out of the use of diachylon it was possible to supply answers to the defence. In her evidence Wardle declared that she only employed it in order to make her pills hold together, and that she knew nothing of its specific action or that it contained poison. The reply to this, upon which we note the judge laid considerable stress in his summing up, was that as Epsom salts are an acknowledged eliminative of lead, it was strange that the prisoner should have recommended them if she were in complete ignorance that diachylon contained lead.

The only other point to which we need call attention is to the fact that the jury in finding the prisoner guilty recommended her to mercy. The ground upon which they did this is not stated in the report before us, but it will seem to many to be indicative of a semi sympathetic attitude towards this class of crime which is undoubtedly to be found in many districts. This attitude, of which those practising at the bar in criminal courts are well aware, often renders convictions difficult to obtain, and makes it desirable that the evidence brought forward should be as irresistibly conclusive as possible. It accounts to some extent for the supineness of local and other authorities who allow a noxious and criminal trade to be carried on so openly that it can be advertised in the public press with impunity.

We have referred above to the part played in the recent prosecution by the medical officer of health, and by the reports furnished under the Midwives Act. To this we would add that although we have no desire to see medical practitioners playing the part of detectives, we see no reason why their cordial coöperation should be withheld where the detection and prevention of the crime of abortion are concerned. All practitioners are as deeply concerned in the protection of the public unofficially as is the medical officer of health by virtue of his position, and the felony in question is one the commission of which by others lays them open to peculiar danger. The position of the medical practitioner who is called in to attend a case in which he suspects its commission is an anxious one. He must respect absolutely the confidences of his patient, yet he knows that, if his suspicions are well grounded, the preservation of silence may at any time lay him open to the charge of being himself the felon or, at any rate, of complicity should the matter come to light. The guilty ones will only be too glad to see him accused or to set the accusation on foot if thereby they can save their own skins. He must be guided as to the course he may take by the exercise of all discretion and by the circumstances of the particular case which concerns him; but we cannot readily assent to the suggestion that a medical man's professional obligations may involve his shielding, at the risk of his own liberty or of his honourable reputation, a criminal who is dangerous to the public. But to separate the criminality of the abortionist from that of the willing subject must be very difficult, while the subject will stand in the sacred relation of patient towards the medical man.

METROPOLITAN HOSPITAL SUNDAY FUND.

A MEETING of this Fund was held on August 2nd at the Mansion House, Sir HORATIO DAVIES, in the absence of the Lord Mayor, presiding. Among those present were Sir Stephen Mackenzie, Sir E Durning Lawrence, Sir William S. Church, Bart., Sir John C. Bell, Sir Savile Crossley, Bart., the Hon. Sydney Holland, Dr. J. G. Glover, and Mr. A. Willett. Letters of regret were read from Archdeacon Sinclair, the Chief Rabbi, the Rev. C. H. Grundy, Mr. T. Wakley, senr., and others.

The chief business of the meeting was to approve of the report of the distribution committee and to recommend that the awards should be paid as soon as possible.

Sir DURNING LAWRENCE, chairman of the Royal Waterloo Hospital for Children, called attention to the small sum awarded to his hospital and hoped that the committee would see its way to enlarge the grant.

Sir WILLIAM CHURCH pointed out that the hospital authorities had held a bazaar in aid of the hospital just before Hospital Sunday which realised £8000. This contravened a rule of the constitution of the Hospital Sunday Fund.

Sir DURNING LAWRENCE denied that the date of the bazaar had been fixed by the hospital. The bazaar had been opened by Royalty and the hospital authorities had no control over the date.

Dr. GLOVER called attention to the large number of out-patients treated at the London Hospital. Many of these, he felt sure, must be able to provide medical attendance for themselves. He also referred to the withholding of the grant to Charing Cross Hospital. It was a very serious matter for the London poor.

Mr. HOLLAND denied that there was any abuse of the out-patient department at the London Hospital and pointed out that there was only one other hospital for adults in the East of London. The only way to reduce the number of out-patients at the London Hospital would be to build more hospitals.

Eventually the report was adopted.

The annual report of the committee of distribution to the council of the Metropolitan Hospital Sunday Fund, 1906, stated that the committee of distribution desired to record with regret the resignation of Sir Felix Schuster, Bart., who is now unable to give the necessary time to the work of the Fund. Mr. George Herring had again most liberally offered to add one-fourth to the amount collected in places of worship, as well as to the City collection. The amount of the Fund to the present time was £56,303, to which had to be added the sum of £3000, a portion of the legacy of £10,000 left to the Fund by the late Mr. Herbert Lloyd, making a total of £59,303. This year 250 institutions had made applications for grants from the Fund, being two more than in 1905, in addition to the nursing associations. Two hospitals which applied for grants were considered ineligible. The committee, though fully realising the excellent work carried on by the Cancer Hospital, had not made an award this year, the hospital not being in want of funds at the present time. The committee recommended the distribution of £57,510 to 161 hospitals and institutions, 60 dispensaries, and 26 nursing associations. The committee recommended that the award to Charing Cross Hospital should be paid when it was proved to its satisfaction that the result of the special appeal to be made next autumn would enable the committee to carry on the work of the hospital. The committee recommended that the grant made last year should be paid to the City Orthopædic Hospital without waiting for the amalgamation to be carried through. 5 per cent. of the total sum collected was set apart to purchase surgical appliances.

The following are the particulars of the awards recommended by the committee of distribution:—

GENERAL HOSPITALS.

	£	s.	d.
Charing Cross Hospital	1204	13	9
French Hospital	356	5	0
German Hospital	580	12	6
Great Northern Central Hospital	1069	7	6
Guy's Hospital	1687	10	0
Hampstead General Hospital	234	7	6
Italian Hospital	206	5	0
King's College Hospital	1389	7	6
London Hospital	5437	10	0
London Homœopathic Hospital	478	2	6
Phillips' Memorial Homœopathic Hospital	33	15	0
London Temperance Hospital	721	17	6
Metropolitan Hospital	1060	0	0
Mildmay Hospital	281	5	0
Miller Hospital and Royal Kent Dispensary	257	16	3
North-West London Hospital	421	17	6
Poplar Hospital	525	0	0
Kensington General Hospital	159	7	6
Royal Free Hospital	1134	7	6
St. George's Hospital	1837	10	0
SS. John and Elizabeth Hospital	309	7	6
St. John's Hospital, Lewisham	145	6	3
St. Mary's Hospital	2343	15	0
Seamen's Hospital Society	1393	2	6
The Middlesex Hospital and Convalescent Home	2100	0	0
Tottenham Hospital	543	15	0
University College Hospital	1906	5	0
Walthamstow, &c., Hospital	135	18	9
West Ham Hospital	543	15	0
West London Hospital	1073	2	6
Westminster Hospital	1500	0	0

SPECIAL HOSPITALS.

CHEST HOSPITALS.

	£	s.	d.
City of London Hospital for Diseases of the Chest, Victoria Park	900	0	0
Hospital for Consumption, Brompton	2203	2	6
Mount Vernon Consumption Hospital, Hampstead	909	7	6
Royal Hospital for Diseases of the Chest, City-road	553	2	6
Royal National Hospital for Consumption (Ventnor)	337	10	0

CHILDREN'S HOSPITALS.

Alexandra Hospital for Hip Disease, W.C.	384	7	6
Banstead Surgical Home	23	8	9
Barnet Home Hospital	43	2	6
Belgrave Hospital for Children, S.W.	135	18	9
Cheyne Hospital for Incurable Children, S.W.	140	12	6
East London Hospital for Children, Shadwell, E.	750	0	0
Evelina Hospital for Sick Children, Southwark, S.E.	182	16	3
Home for Incurable Children, Hampstead	79	13	9
Home for Sick Children, Sydenham, S.E.	117	3	9
Hospital for Sick Children, Great Ormond-street, W.C.	1040	12	6
Kensington, for Children, and Dispensary	84	7	6
North-eastern Hospital for Children, Hackney-road, N.E.	562	10	0
Paddington Green Hospital for Children, W.	187	10	0
St. Mary's Hospital, Plaistow, E.	262	10	0
St. Monica's Hospital, Brondesbury, N.W.	75	0	0
Victoria Hospital for Children, King's-road, Chelsea, S.W.	562	10	0
Victoria Home, Margate	37	10	0
Hospital for Hip Disease, Sevenoaks	42	3	9

LYING-IN HOSPITALS.

British Lying-in Hospital, Endell-street, W.C.	70	6	3
City of London Lying-in Hospital, City-road, E.C.	200	0	0
Clapham Maternity Hospital	28	2	6
East-End Mothers' Home	75	0	0
General Lying-in Hospital, Lambeth, S.E.	28	2	6
Queen Charlotte's Lying-in Hospital, Marylebone-road, W.	468	15	0

HOSPITALS FOR WOMEN.

Chelsea Hospital for Women, S.W.	281	5	0
Hospital for Women, Soho-square, W.	403	2	6
Grosvenor Hospital for Women and Children, Vincent-square, S.W.	159	7	6
New Hospital for Women, Euston-road, W.C.	225	0	0
Royal Waterloo Hospital for Children and Women, Lambeth, S.E.	46	17	6
Samaritan Free Hospital, Marylebone-road, W.	421	17	6

OTHER SPECIAL HOSPITALS.

Middlesex Hospital, Cancer Wing	263	8	9
London Fever Hospital, Islington, N.	187	10	0
Gordon Hospital for Fistula, Vauxhall Bridge-road, S.W.	14	1	3
St. Mark's Hospital for Fistula, City-road, E.C.	248	8	9
National Hospital for the Diseases of the Heart, Soho-square, W.	154	13	9
Female Lock Hospital, Harrow-road, W.	253	2	6
Hospital for Epilepsy, Paralysis, and other Diseases of the Nervous System, Maida-vale, W.	126	11	3
National Hospital for the Paralysed and Epileptic, W.C.	1078	2	6
West End Hospital for Diseases of the Nervous System	290	12	6
Central London Ophthalmic Hospital, Gray's Inn-road, W.C.	159	7	6
Royal Eye Hospital, St. George's-circus, S.E.	267	3	9
Royal London Ophthalmic Hospital, City-road, E.C.	1031	5	0
Royal Westminster Ophthalmic Hospital, Charing Cross, W.C.	159	7	6
Western Ophthalmic Hospital, Marylebone-road, W.	75	0	0
Royal National Orthopædic Hospital, Great Portland-street, W.	150	0	0
Royal Sea Bathing Hospital, Margate	271	17	6
St. John's Hospital for Diseases of the Skin	18	15	0
Western Skin Hospital, Great Portland-street, W.	4	13	9
St. Peter's Hospital for Stone, Covent Garden	70	6	3
Central London Throat and Ear Hospital, Gray's Inn road, W.C.	43	2	6
Hospital for Diseases of the Throat, Golden-square, W.	28	2	6
London Throat Hospital, Great Portland-street, W.	23	8	9
Royal Ear Hospital, Frith-street, W.	27	3	9
Royal Dental Hospital of London, W.C.	290	12	6
National Dental Hospital, 149, Great Portland-street, W.	15	0	0

CONVALESCENT HOSPITALS.

Metropolitan Convalescent Institution, Walton and Broadstairs	628	2	6
Ditto Ditto Bexhill	412	10	0
All Saints' Convalescent Hospital, Eastbourne	375	0	0
All Saints' Convalescent Home, St. Leonards-on-Sea	23	8	9
Ascot Priory Convalescent Home	70	6	3
Brentwood Convalescent Home for Children	9	7	6
Charing Cross Hospital Convalescent Home, Limpsfield	70	6	3
Chelsea Hospital for Women Convalescent Home, St. Leonards	42	3	9
Deptford Medical Mission Convalescent Home, Bexhill	18	15	0
Fairlight Convalescent Home, Hastings	23	8	9
Friendly Societies Convalescent Home, Dover	84	7	6
Mrs. Gladstone Convalescent Home, Mitcham	89	1	3
Hahnemann Convalescent Home, Bournemouth	28	2	6
Hanwell Convalescent Home	15	18	9
Hendon, Ossulston Home	53	8	9
Herbert Convalescent Home, Bournemouth	28	2	6
Herne Bay Baldwin-Brown Convalescent Home	56	5	0
Homœopathic Hospital Convalescent Home, Eastbourne	23	8	9
Hemel Hempstead Convalescent Home	43	2	6
Incorporated Morley and Bevan Convalescent Home	281	5	0
Mrs. Kitto's Convalescent Home, Reigate	46	17	6
London Hospital Convalescent Home, Tankerton	67	10	0
Mary Wardell Convalescent Home for Scarlet Fever	56	5	0
Police Seaside Home, Brighton	46	17	6
St. Andrew's Convalescent Home, Clewer	93	15	0
St. Andrew's Convalescent Home, Folkestone	168	15	0
St. John's Home for Convalescent and Crippled Children, Brighton	32	16	3
St. Joseph's Convalescent Home, Bournemouth	56	5	0
St. Leonards-on-Sea Convalescent Home for Poor Children	98	12	6
St. Mary's Convalescent Home, Shortlands	20	12	6
St. Michael's Convalescent Home, Westgate-on-Sea	32	16	3
Seaside Convalescent Hospital, Seaford	93	15	0

COTTAGE HOSPITALS.

Acton Cottage Hospital	56	5	0
Beckenham Cottage Hospital	78	0	0
Billingsgate Medical Mission Hospital	46	17	6
Blackheath and Charlton Cottage Hospital	79	13	9
Bromley, Kent, Cottage Hospital	117	3	9
Bushey Heath Cottage Hospital	34	13	9
Canning Town Cottage Hospital	56	5	0
Chislehurst, Sidcup, and Cray Valley Cottage Hospital	60	18	9
Cobham Cottage Hospital	20	12	6
East Ham Cottage Hospital	72	3	9
Eltham Cottage Hospital	45	0	0
Enfield Cottage Hospital	65	12	6
Epsom and Ewell Cottage Hospital	50	12	6
Hounslow Cottage Hospital	42	3	9
Dartford Cottage Hospital	84	7	6
Kingston, Victoria Hospital	62	16	3
Mildmay Cottage Hospital	23	8	9
Reigate and Redhill Cottage Hospital	103	2	6
Sidcup Cottage Hospital	32	16	3
Tilbury (Passmore Edwards) Cottage Hospital	46	17	6
Willesden Cottage Hospital	103	2	6
Wimbledon Cottage Hospital	46	17	6
Wimbledon South Cottage Hospital	46	17	6
Woolwich and Plumstead Cottage Hospital	51	11	3

INSTITUTIONS.

Bolingbroke Hospital	271	17	6
Hospital for Invalid Gentlewomen, Harley-street	93	15	0
St. Saviour's Hospital and Nursing Home	94	13	9
National Sanatorium for Consumption, Bournemouth	93	15	0
Invalid Asylum, Stoke Newington	37	10	0
Firs Home, Bournemouth	28	2	6
St. Catherine's Home, Ventnor	23	8	9
Friedenheim Hospital for the Dying	300	0	0
Oxygen Home, Fitzroy-square	37	10	0
Santa Claus Home, Highgate	59	1	3
Free Home for Dying, Clapham	121	17	6
St. Luke's House, Pembridge-square, W.	112	10	0
Royal Mineral Water Hospital, Bath	46	17	6
Eversfield, St. Leonards	*Nil.*		
St. Winifred's Home, Holloway	56	5	0

DISPENSARIES.

Battersea Provident Dispensary	112	10	0
Blackfriars Provident Dispensary	18	15	0
Bloomsbury Provident Dispensary	14	1	3
Brixton, &c., Dispensary	49	13	9
Brompton Provident Dispensary	18	15	0
Buxton Street Dispensary	18	15	0
Camberwell Provident Dispensary	77	16	3
Camden Town Provident Dispensary	15	0	0
Chelsea, Brompton, and Belgrave Dispensary	44	1	3
Chelsea Provident Dispensary	13	2	6
Childs Hill Provident Dispensary	15	18	9
City Dispensary	51	11	3
City of London and East London Dispensary	9	7	6
Clapham General and Provident Dispensary	22	10	0
Deptford Medical Mission	23	8	9
Eastern Dispensary	34	13	9
East Dulwich Provident Dispensary	38	8	9
Farringdon General Dispensary	42	3	9
Finsbury Dispensary	46	17	6
Forest Hill Provident Dispensary	37	10	0
Greenwich Provident Dispensary	31	17	6
Hackney Provident Dispensary	16	17	6
Hampstead Provident Dispensary	58	2	6
Holloway and North Islington Dispensary	42	3	9
Islington Dispensary	56	5	0
Islington Medical Mission	38	8	9
Kensal Town Provident Dispensary	15	18	9
Kennington and Vauxhall Provident Dispensary	13	2	6
Kentish Town Medical Mission	19	13	9
Kilburn, Maida Vale, and St. John's Wood Dispensary	38	8	9
Kilburn Provident Medical Institution	46	17	6
London Dispensary, Spitalfields	14	1	3
London Medical Mission, Endell-street	116	5	0
Margaret-street, for Consumption	21	11	3
Metropolitan Dispensary	58	2	6
Mildmay Medical Mission Dispensary	23	8	9
Notting Hill Provident Dispensary	13	2	6
Paddington Provident Dispensary	31	17	6
Public Dispensary, Clare Market, W.C.	35	12	6
Queen Adelaide's Dispensary	29	1	3
Royal General Dispensary	23	8	9
Royal Pimlico Provident Dispensary	41	5	0
Royal South London Dispensary	46	17	6
St. George's and St. James's Dispensary	46	17	6
St. George's, Hanover-square, Provident Dispensary	28	2	6
St. John's Wood Provident Dispensary	45	18	9
St. Marylebone General Dispensary	47	16	3
St. Pancras and Northern Dispensary	30	0	0
St. Pancras Medical Mission	19	13	9
South Lambeth, Stockwell, and North Brixton Dispensary	36	11	3
Stamford Hill, Stoke Newington Dispensary	56	5	0
Tower Hamlets Dispensary	43	2	6
Walworth Provident Dispensary	15	0	0
Wandsworth Common Provident Dispensary	14	1	3
Westbourne Provident Dispensary	16	17	6

	£	s.	d.
Western Dispensary	62	16	3
Western General Dispensary	104	1	3
Westminster General Dispensary	46	17	6
Whitechapel Provident Dispensary	32	16	3
Woolwich Provident Dispensary	24	7	6
NURSING ASSOCIATIONS.			
Aldgate Freedom	5	0	0
Aldgate Lordship	5	0	0
Belvedere and Abbey Wood	5	0	0
Brixton	20	0	0
Central St. Pancras	15	0	0
Hackney	20	0	0
Hammersmith and Fulham	35	0	0
Hampstead	15	0	0
Kensington	40	0	0
Kilburn	15	0	0
Kingston	30	0	0
Metropolitan (Bloomsbury)	50	0	0
St. Olave's (Bermondsey)	30	0	0
Paddington and Marylebone	35	0	0
Plaistow	85	0	0
Rotherhithe	10	0	0
Shoreditch	55	0	0
South London (Battersea)	45	0	0
Tottenham	5	0	0
Southwark	30	0	0
South Wimbledon	15	0	0
Westminster	25	0	0
Woolwich, Plumstead, and Charlton	30	0	0
East London	150	0	0
North London	60	0	0
London District	360	0	0

MEDICINE AND THE LAW.

Infection from Milk.

DURING recent years several outbreaks of infectious disease have been traced to milk which has been shown to be the means of spreading such diseases among the persons who consume it. Scarlet fever is one of the diseases most commonly spread in this way. It is clear that the germs of that disease occasionally find their way into milk and they seem to thrive in it. These germs may get in either because some person suffering from scarlet fever has been milking the cows or has otherwise been brought into contact with the milk, and it has also been thought that the disease may be caused by the animal being itself the source of infection. In the case of a recent outbreak the source was traced to the farm from which the milk came, when it was found that one of the household was suffering from scarlet fever, and the farmer was unaware of the fact until the medical officer of health arrived on the scene from the district in which the infection had been spread. Besides scarlet fever there are other diseases, the germs of which grow and are conveyed in milk. Of these, typhoid fever, tuberculosis, and diphtheria appear to be the chief. The germs of typhoid fever usually find their way into milk from the water which is either used to wash the vessels into which the milk is put, or is added for the purpose of dilution. Much, of course, can be done to prevent the spread of infectious disease from milk by having the dairies and cowsheds kept thoroughly clean and well ventilated, and this can be effected by the sanitary authorities acting under the orders made pursuant to the Contagious Diseases (Animals) Act, 1886, Section 9, which was not repealed by the consolidating Act of 1894. Experience, however, has shown that even these powers are not sufficient to check the spread of infection, and there are additional powers in Section 4 of the Infectious Disease (Prevention) Act, 1890, and also as regards London in Section 71 of the Public Health (London) Act, 1891. It is questionable, however, whether these powers are sufficient. Statutes can afford assistance in two ways. They can confer on the medical officers of health powers of inspection and of obtaining information, and they can also enable them to stop the supply coming from an infected dairy until the cause of infection has been removed. Section 4 of the Infectious Disease (Prevention) Act, 1830, enacts that in case the medical officer of health is in possession of evidence that any person in the district is suffering from infectious disease attributable to milk supplied within the district from any dairy situate within or without the district, or that the consumption of milk from such dairy is likely to cause infectious disease to any person residing in the district, such medical officer shall, if authorised in that behalf by an order of a justice having jurisdiction in the place where such dairy is situate, have power to inspect such dairy, and if accompanied by a veterinary inspector or some other properly qualified veterinary surgeon to inspect the animals therein. If on such inspection the medical officer of health shall be of opinion that infectious disease is caused from consumption of the milk supplied therefrom, he shall report thereon to the local authority and his report shall be accompanied by any report furnished to him by the said veterinary inspector or veterinary surgeon, and the local authority may thereupon give notice to the dairyman to appear before it within such times not less than 24 hours as may be specified in the notice to show cause why an order should not be made requiring him not to supply any milk therefrom within the district until such order has been withdrawn by the local authority. If in the opinion of the local authority he fails to show such cause then the local authority may make such order as aforesaid; and the local authority shall forthwith give notice of the facts to the sanitary authority and county council (if any) of the district or county in which such dairy is situate and also to the Local Government Board. Any person refusing to permit the medical officer of health on his production of such order to inspect any dairy, or if so accompanied to inspect the animals kept there, or if after any such order not to supply milk has been given supplying any milk within the district in contravention of such order, shall be deemed guilty of an offence against this Act. The order is to be withdrawn immediately the cause of infection is removed. The word "dairy" includes any farm, farmhouse, cowshed, milkstore, milkshop, or other places from which milk is supplied or in which milk is kept for purposes of sale, and "dairyman" includes any cowkeeper, purveyor of milk, or occupier of a dairy. A medical officer of health, if he suspects that milk is the cause of the disease, will act on his own initiative without waiting for a justice's order. It would be an advantage if local authorities had the power to obtain a list of customers from a dairyman whose milk is suspected; they would then be able more easily to tell whether or not the milk was the actual cause of the disease. It will be noticed that in the section above quoted the local authority can only stop the dairyman from sending milk into its own district. There is nothing whatever to prevent him from sending it into any other urban or rural district in the country. No doubt the proper remedy is to stop the sale of the infected milk entirely. This might be done either by the sanitary authority of the district or by the Local Government Board. It would seem, therefore, that if any amendment of the law is required it should be in the direction of giving the medical officers of health greater powers to discover the source of infection, so that if it is due to milk they should learn the fact at once and immediately inform the purveyor. Urban and rural district councils are the local authorities charged with carrying out and enforcing the Dairies, Cowsheds, and Milkshops Order of 1888 made by the Privy Council, the powers of which in this respect have since been transferred to the Local Government Board. Under these orders the council is required to keep a register of persons carrying on the trade of cowkeepers, dairymen, or purveyors of milk, and persons carrying on those trades without being registered are liable to penalties. A person, however, who only keeps cows or a dairy for the purpose of making and selling butter or cheese and not for selling milk is not treated as a cowkeeper or dairyman for this purpose. If disease exists among the cattle in a dairy or cowshed or other place the milk of a diseased cow is not to be mixed with other milk, or sold or used for human food or (unless it has been boiled) sold or used for the food of swine.

Actions against Medical Men by their Patients and Vice Versâ.

From time to time medical men struck by the obvious hardship of an action brought against a member of their profession by a former patient suggest in the public press that the case should sometimes be reversed and that an action should be brought by a medical man on account of suffering resulting to him in the pursuit of his practice. We have ourselves received letters to this effect and one recently appeared in the *Pall Mall Gazette*, signed "M.D.," which contained the following passage: "In a case in which a medical man has undoubtedly caught, say, scarlet fever, from a patient, could that patient be sued for damages by the medical attendant under the Employers' Liability Act? It seems to me—not being versed in the law—that this suing game can be played by both sides, doctor and patient." To many the answer will be obvious, but to others who like "M.D." are not as "versed

in the law" as every man by law is assumed to be, we may point out that the liability of the medical man towards his patient, upon which actions are brought such as that of Crier *v.* Hope and Currie, commented upon in THE LANCET of July 28th, is based upon allegations of "negligence." In other words, it is as necessary that negligence should be proved to the satisfaction of a jury in an action of this kind against a medical man in order to constitute a "cause of action" as it is when one man sues another for running over him in the street. If the running over is a pure accident—due, for example, to a horse bolting through being frightened by lightning—there is no liability, and justly so. The Employers' Liability Act is referred to in the passage quoted, so we may add that the Employers' Liability Act and the Workmen's Compensation Acts provide in certain classes of employment and in certain defined circumstances that an employer shall be liable for injuries sustained by his servant in the course of his employment, when under the common law no such liability would exist. For example, these Acts, where they apply, may enable a servant to sue his employer on account of injuries caused by the negligence of a fellow servant. An employer is liable to strangers at common law for injuries caused to them by his servant's negligence in the course of his employment, as everybody knows, or should know, but not when one servant injures another in the same employment. We need hardly point out that the relations of a patient to his medical man are not those of master and servant. Injury arising to a medical man from attending upon a patient can rarely arise through negligence on the part of the latter only, without any intention of running a risk on the part of the former, and there would be plenty of occasion at the trial of such an action for the airing of the well-worn legal saying, "Volenti non fit injuria," which might be applied generally by saying that those who enter of their free will into a dangerous profession must accept the perils which arise out of it. They must endure without complaining such personal suffering as may be the natural result of what they have undertaken to do.

BRITISH MEDICAL BENEVOLENT FUND.

AT the July meeting of the committee 22 applications were considered and grants amounting to £161 were voted in relief, one case being postponed for further inquiries. Appended is a short abstract of the cases assisted:—

Daughter, aged 54 years, of late M.R.C.S. Eng., L.S.A., who practised in Bucks. Used to be a governess but is now unable to teach on account of deafness and can only earn a few shillings a week by needlework. Relieved five times, £56. Recommended by Lady Milbank. Voted £10 in ten instalments.

Widow, aged 50 years, of M.R.C.S. Eng., L.S.A., who practised in London. No income; indifferent health; no children. Quite unprovided for at husband's death a few years ago. Relieved twice, £24. Recommended by his Grace the Archbishop of York. Voted £12 in 12 instalments.

Widow, aged 62 years, of L.R.C.P. Lond., L.R.C.S. Edin., who practised in London. No income; only son, aged 42 years, is barely able to support himself on account of mental weakness. Earns a few shillings a week by needlework. Husband's means exhausted by six years' illness before death. Recommended by Mr. Percy Warner. Voted £10 in ten instalments.

Daughters, aged 68 and 65 years respectively, of late L.R.C.P., L.R.C.S. Edin., who practised in Scotland. At father's death, 22 years ago, the younger sister obtained a certificate for teaching and for 22 years has been head mistress in a State-aided episcopal school but is now obliged to retire (on account of age) with a pension of £20 per annum. The elder sister is living with her, attending to the household duties, and has assisted for many years in the charge of a resident patient. Recommended by Sir Hector Cameron. Voted £18 in 12 instalments.

Daughter, aged 48 years, of late M.R.C.S. Eng., who practised in Oxfordshire. Income less than £3 a year and since her father's death some years ago has supported herself by taking situations as servant, &c., but has now had an accident by which she is temporarily incapacitated. Recommended by Miss Kingslake. Voted £5.

Widow, aged 54 years, of L.K.Q.C.P. Irel., who practised in Bucks. Practically unprovided for at husband's death. Has endeavoured to establish a nursing home and is now trying to obtain situation as a companion. Recommended by Dr. William Travers. Voted £5.

Daughter, aged 21 years, of late L.R.C.P., L.R.C.S. Edin., who practised in Jamaica. Has been obliged to give up a situation as draper's assistant on account of severe dyspepsia and nervous exhaustion from carious teeth. Is advised to have 23 teeth extracted and replaced by artificial ones and asks for help to get this done. Recommended by Mr. Edward East and Mrs. Evelyn Martin. Voted £6.

Widow, aged 46 years, of L.S.A., who practised in London. Quite unprovided for at husband's death two years ago. Small earnings from needlework; ill-health and bad sight. Two sons, aged 19 and 14 years respectively, barely self-supporting. Relieved once, £12. Recommended by Dr. J. A. Ormerod. Voted £14 in 13 instalments, £2 being an emergency grant.

Widow, aged 52 years, of M.B. Cantab., who practised in London. No provision at husband's death five years ago and has supported herself with a little help from this Fund and from friends and by washing and other work. Five children, of whom three are in domestic service, one a boy, earning 6s a week is an apprentice, and the fifth, a daughter, aged five years. Relieved three times, £41. Recommended by Mr. J. Roche Lynch. Voted £12 in two instalments.

Widow, aged 55 years, of L.R.C.P. Lond., L.R.C.S. Irel., who practised in South Wales. At husband's death a few years ago had £500 insurance money but has spent a considerable portion of this to maintain and educate a daughter, who is studying cookery and laundry work, with a view to teaching these subjects under a county council. Ekes out small income from the remainder of her capital by letting lodgings and the help received from a Masonic fund. Relieved once £5. Recommended by Dr. A. Sheen, vice-president. Voted £5.

Daughter, aged 37 years, of late M.R.C.S. Eng., L.S.A., who practised in Staffordshire. Endeavours to support herself by literary work. Indifferent health. Relieved once, £12. Recommended by Dr. J. Pickett. Voted £5.

Daughter, aged 58 years, of late M.R.C.S. Eng., L.S.A., who practised in Warwickshire. Supported herself for many years as a dispenser but now finds it impossible to get work on account of her age. Only income about £15 a year, being the interest on savings. Relieved once, £10. Recommended by Dr H. F. Haynes. Voted £10 in ten instalments.

Widow, aged 35 years, of M.R.C.S. Eng., L.R.C.P., who practised in London but was incapacitated for some years before death. Applicant maintains herself as a working housekeeper but has been recommended to have a short rest. Two children, aged 15 and 11 years respectively. Relieved twice, £20. Recommended by Mr. S. H. Byam. Voted £5.

Daughter, aged 58 years, of late M.R.C.S. Eng., L.S.A., who practised in Hants. Income £15 a year and receives a little help from brothers. Endeavours to earn a few shillings a week by needlework but finds her eyesight is failing. Relieved once, £6. Recommended by Dr. W. R. Grove. Voted £6 in two instalments.

Daughter, aged 25 years, of late M.D., who practised in Middlesex. Unable to earn her living on account of ill-health and dependent on a mother with a very small income. Relieved once, £10. Recommended by Dr. H. A. Sansom. Voted £5.

Daughter, aged 59 years, of late M.R.C.S. Eng., L.S.A., who practised in Hampshire. Used to be a governess but unable to obtain pupils any longer. Tries to supplement a pension of £30 per annum from a charity by letting rooms. Relieved nine times, £78. Recommended by Sir Constantine Holman, vice-president. Voted £3.

Widow, aged 50 years, of L.S.A., who practised in Notts. At husband's death, nearly 20 years ago, applicant trained as a maternity nurse with the aid of a grant given by this fund and has supported herself ever since, but two years ago invested her savings in a registry office, which has not been a success. Two daughters, aged 21 and 17 years respectively, barely self-supporting. Relieved once, £12. Recommended by Mr. Edmund Owen, vice-president. Voted £6.

Widow, aged 66 years, of M.D. St. And., M.R.C.S. Eng., who practised in London. No income and dependent on children. Relieved five times, £56. Recommended by Mr. E. Parker Young and by Mr. H. W. Kiallmark. Voted £12 in 12 instalments.

Widow, aged 60 years, of L.R.C.P. Edin., L.F.P.S. Glasg. Dependent on a pension of £20 a year from a charity and occasional help from a son earning a small weekly wage. Relieved nine times, £96. Recommended by Dr. F. W. Tatham. Voted £10 in ten instalments.

Daughter, aged 50 years, of late M.R.C.S. Eng., L.S.A., who practised in London. Has supported herself for 30 years by nursing but is now incapacitated by ill-health and dependent on a niece who lets lodgings to maintain herself and a consumptive brother. Relieved twice, £15. Voted £2 as an emergency grant, the case to be considered again at the next meeting.

ASYLUM REPORTS.

Asylum for the Counties of Salop and Montgomery and for the Borough of Wenlock (Sixty-first Annual Report for the Year 1905).—The reports of the visiting committee of this asylum deal largely with the question of providing increased accommodation. At the close of 1905 the asylum contained 801 patients, or 50 more than the numbers provided for; at the same date 65 patients were boarded out elsewhere. The committee is of opinion that it is advisable to enlarge the present institution to accommodate 200 more patients and has notified the county councils to this effect. It likewise recommends the latter to unite with several other local authorities in adapting a residence in the neighbourhood of Birmingham for the purpose of an asylum for idiot and imbecile children—a very wise proposal. The report of the medical superintendent, Dr. Daniel F. Rambaut, states that the admissions numbered 230, the largest annual admission-rate in the history of this asylum. The recoveries were in the proportion of 33·91 per cent. (males) and 38·46 per cent. (females) of the admissions. 86 per cent. of those discharged recovered had been resident less than 12 months. The average daily number resident was 785. The causation of insanity in, and the character of, the admissions are not referred to in the report, but from the statistical tables it appears that only 29 of the total admissions had the "insane

diathesis," by which we presume is meant hereditary predisposition to insanity—a very small proportion indeed. In the large proportion of 56 the cause of the insanity was unknown. The forms of insanity appear from the table to have been the usual ones; general paralysis occurred in the low proportion of 12 of the 230 admissions. The deaths numbered 96, giving a percentage of 12 22 on the average number resident. Necropsies were obtained in the low proportion of 59 per cent. of the deaths; all cases being examined where no objection is made by the friends, the inference is that the latter object more commonly than is usual. 21·9 per cent. of the deaths—a high proportion—were due to tuberculous disease, a condition of things associated with the overcrowding referred to above. Four inquests were held during the year, two of which are of interest; in one the patient's death was ascribed to her having taken floor polish and in the other the verdict was "obstruction of the bowels caused by eating human hair." The report of the Commissioners in Lunacy, beyond a reference to the overcrowding which exists, contains nothing particularly noteworthy.

THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

FOR the third time in its history the British Association for the Advancement of Science held its meeting in York, and the proceedings were commenced on August 2nd with the delivery of the presidential address by Professor E. RAY LANKESTER, in which he gave an outline of the advancement of science in the past 25 years. In the course of his remarks Professor Lankester said that the meeting this year possessed an added interest from the facts that the first meeting of the association was held in York just 75 years ago and that its jubilee was celebrated at York in 1881 under the presidency of Sir John Lubbock (now Lord Avebury). Professor Ray Lankester closed his address with a strong appeal to the public to take a greater interest in the work of scientific research, and expressed the view that the organisation and finance of the research army should be the care of the State.

As is usually the case the meeting was divided into quite a large number of sections, and we can only attempt to review a few of the papers with a medical bearing.

Professor FRANCIS GOTCH presided in the section of Physiology, and he addressed his audience on the aims and methods of physiology. At the outset he referred to certain wide issues which were involved in the statement of the late Sir John Burdon Sanderson that the business of the physiologist was "to acquire an exact knowledge of the chemical and physical processes of animal life." The limitation of physiology to ascertainable characters of a chemical and physical type did not commend itself to certain physiologists, physicists, and chemists who had revived under the term "neovitalism" the vitalistic conceptions of older writers. They denied that physiological phenomena could ever be adequately described in terms of physics and chemistry. What possible justification, asked Professor Gotch, was there for branding as hopeless all further physical and chemical investigations of certain aspects of certain phenomena by attributing these to vital directive forces? The introduction of vitalism or biotic energy as a fictitious causative explanation was so opposed, he held, to the spirit and the progress of science that we might safely predict the complete abandonment of this position at a comparatively early date. At any rate, the recent history of physiological progress showed that investigations confined to the study of physical and chemical processes had been the one fruitful source of physiological knowledge. Professor Gotch gave as instances the splendid work of Emil Fischer on the nature and constitution of carbohydrates and quite recently of proteids.

The presidential address in the Chemistry section was delivered by Professor WYNDHAM DUNSTAN, who took for his subject, Some Imperial Aspects of Applied Chemistry. He pointed out the intimate connexion of chemical science with the problems that await solution in connexion with the utilisation of the raw materials and economic products of our colonies. The British manufacturer, he said, is in need of increased and better supplies of the raw material on which his industrial activity depends, and there were vast resources in our colonies which could only be developed by properly directed scientific investigation. In the course of his address Professor Dunstan gave an interesting account of the indiarubber industry, and added that chemists may confidently predict that before the British Association again meets at York the synthetic production of rubber will be a fully-accomplished fact.

An interesting discussion on Radio-activity was opened by the Hon. R. J. STRUTT in the Mathematical and Physical Science section, who dealt with the view that there might be enough radium in the earth to account for its internal heat. He had been led to the conclusion that there was much more radium in rocks than would be needed to maintain the earth's internal heat if the earth were constituted of rock throughout. From this he concluded that the interior of the globe does not contain radium.—Sir WILLIAM CROOKES expressed the idea that radium compressed and locked up in a rock had not much opportunity for heat emission.—Sir WILLIAM RAMSAY dissented from this view as his experiments had led him to exactly opposite conclusions. If the earth was a vast meteorite with a core and slag for crust they would know, he said, the amount of radium in it by testing meteorites, but Mr. STRUTT pointed out that meteorites did not contain radium.

There were some interesting papers communicated to the Physiological section on Sleep and Rest. Dr. THEODORE DYKE ACLAND pointed out the necessity of sleep or rest, especially for young and growing persons. He said that insufficient sleep diminished the power of resistance in the individual and rendered the young more liable to contract preventable disease.—Professor C. F. SHERRINGTON said that it was difficult to formulate any reliable theory as to the amount of sleep really required, and what was wanted was more data on these points, especially in regard to children and the boys in public schools.—Dr. C. S. MYERS said that he found that his memory grew in proportion to the number of hours of sleep that he took.

In the Chemistry section Mr. THOMAS JAMIESON read an instructive paper on the Utilisation of Nitrogen in Air by Plants. He had found that certain plants were endowed with a distinct organ which was admirably situated and especially adapted for the absorption of nitrogen. This organ was at first destitute of nitrogen; it became gradually gorged with nitrogenous matter, and then disgorged the matter into the plant generally. The results were supported by a very interesting series of experiments.—A paper on a similar subject was read by Professor W. B. BOTTOMLEY who referred to the fact that sprinkling urine on the floor of the greenhouse caused a more luxurious growth of orchids. The ammonia liberated from urine was absorbed along with the aqueous vapour condensed by the velamen cells, the absorption of the ammonia being accomplished by the nitrifying action of bacteria.—Dr. GEORGE REID also referred to the nitrifying action of organisms in an interesting paper on the treatment of sewage in shallow filters containing fine particles. He concluded that, given fine particles and good distribution, sewage filters may be constructed much shallower than hitherto; and also that, if a sewage by reason of its strength should prove to be exceptionably resistant to treatment, more will be effected by increasing the area than by deepening the filter.—An interesting paper was read in Section G by Mr. A. J. MARTIN, M.I.C.E., on a general supply of gas for light, heat, and power production. The inauguration of a general supply of cheap gas would, he said, have far-reaching consequences. The smoke nuisance, with its appalling death roll, would be done away with, and the annoyance and damage to property from smoky fogs would be brought to an end. A cheap and abundant supply of sulphate of ammonia would come to the aid of our distressed agricultural interests. The most far-reaching effect of cheap gas, however, would probably be in stimulating the establishment of manufacturing plants in rural districts, thus helping to relieve the congestion in overcrowded towns. No single factor, he pointed out, had played so great a part in determining the distribution of industries as the existence of natural sources of power, and with gas at the prices at which it could be supplied from the collieries, gas power would be even cheaper than water power.

Looking Back.

FROM

THE LANCET, *SATURDAY*, August 9th, 1828.

THE FIRE PROOF MAN.

THE French Medical Journal, *La Clinique*, gives an account of the experiments of M. Martinez, the fire-proof man, as he is called, who is now one of the principal objects of attraction at Paris. M. Martinez is not, like the celebrated Russian salamander, Chamouni, insensible, for a given period, to the effects of heat; on the contrary, he suffers so much exhaustion from his experiments, that he is only able to repeat them once a week. He assumes the title of "Incombustible"; but after the fate of Chamouni, it may reasonably be doubted whether any man can fairly lay claim to the privilege of being fire-proof. The Russian salamander was remarkable for the simplicity and singleness of his character, as well as for that idiosyncrasy in his constitution, which enabled him, for so many years, not merely to brave the effects of fire, but to take delight in an element where other men find destruction. He was above all artifice, and would often entreat his visitors to melt their own lead, or boil their own mercury, that they might be perfectly satisfied of the gratification he derived from drinking those preparations. He would also present his tongue, in the most obliging manner, to all who wished to pour melted lead upon it, and stamp an impression of their seals. His merit, however, was never sufficiently acknowledged, till he was found dead in the oven which he so often entered to amuse his visitors, by what he called his grand experiment,

"Urit enim fulgore suo qui prægravat artes
Infra se positas; extinctus amabitur idem."

This grand experiment was to enter an oven with a raw leg of mutton, and not to retire from it till the joint was thoroughly baked. Chamouni entered the oven once too often; his ashes were collected, and conveyed to Mojaisk, his native town, where a neat monument has been erected to his memory, and a well-written Latin inscription commemorates his fate.

M. Martinez, the French salamander, says *La Clinique*, was born at the Havannah; he is 43 years of age, about five feet high, and appears to be of a robust constitution. He has the complexion and features of a Creole; his nose is flat, and, at present, somewhat disfigured by sores produced by the bursting of a thermometer, which was imprudently carried too near his person, at a late experiment, in order to ascertain the temperature of his body. M. Martinez, in his youth, followed the trade of a baker, and from the age of nine to twelve years, was constantly in the habit of exposing himself to very high degrees of heat. Practice has enabled him to bring to perfection a capacity for supporting heat, which seems to be peculiar to persons engaged in the occupation of baking. Tillet gives an account of three girls, servants to a baker, who would remain in an oven heated to a very high temperature, while they swept it, laid the wood, and set the loaves for baking, taking no other precaution than that of keeping the door open. He has ascertained that they remained fourteen or fifteen minutes in the oven, when it was heated to 270° Fahrenheit, ten minutes at 279°, and fifteen minutes at 364°. Thus they supported a degree of heat 67° above that of boiling water, and 170° above that of the human body. Duhamel, Bankes, Solander, and others, have shown by experiments made upon themselves, that man may support for some time, a temperature exceeding the natural heat by 174°. On Tuesday last, M. Martinez, the fire-proof man, exhibited his experiments before a vast concourse of spectators. To obviate all suspicion, an oven was heated in the middle of one of the grass-plots in the garden of Tivoli. At twenty-two minutes after eight, M. Martinez entered the oven; the thermometer, which was left in it eleven minutes, indicating 338° Fahrenheit. He remained in the oven fourteen minutes; his pulse, which was at 76 when he entered, beat 130 strokes in a minute when he came out.

Second experiment.—At two minutes before nine, his pulse was at 85; he again entered the oven, and remained seven minutes, the thermometer being at 285° Fahrenheit. The crowd of spectators who rushed forward to see him, when he came out, prevented the exact ascertainment of the state of his pulse, but it was less frequent than at the end of the first experiment.

Third experiment.—At nine minutes past nine, M. Martinez was placed upon a plank, surrounded with candles, and introduced into the oven, the door of which was then closed. He remained in it three minutes. On coming out his face was of a violet colour, but he hummed a tune with great apparent indifference, and plunged himself into a bath of cold water. Before the immersion, his pulse beat 144 strokes in a minute.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeon R. T. A. Levinge to the *President*, for three months' course at the Royal City of Dublin Hospital. Staff Surgeon H. Clift to the *Hawke* on recommissioning.

The undermentioned Surgeons have been promoted to the rank of Staff Surgeon in His Majesty's Fleet:—Patrick William MacVean (dated May 15th, 1903); Matthew Livingston Mitchell Vaudin and William Handford Thomson (dated May 13th, 1904); Ernest Stewart Reid (dated Nov. 10th, 1904); and Francis Frederick Lobb, Charles Clarke Macmillan, D.S.O., and James George Watt (dated May 23rd, 1906).

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Edward North to be Colonel, vice W. E. Saunders, C.B., deceased (dated July 18th, 1906).

The undermentioned Majors to be Lieutenant-Colonels (dated July 28th, 1906):—Charles H. Burtchaell, John J. Gerrard, John S. Davidson, James Will, James Fallon, John V. Salvage, Arthur R. Aldridge, Joseph Fayrer, Charles J. Macdonald, Charles J. W. Tatham, Thomas H. F. Clarkson, Cathcart Garner, Robert W. Wright, Edwin Eckersley, Reginald J. C. Cottell, Daniel Hennessy, David M. Saunders, Denis M. O'Callaghan, Michael J. Whitty, James F. Donegan, John Donaldson, Hugh B. Mathias, D.S.O., George H. Barefoot, Foster R. Newland, Reginald J. Windle, John J. Russell, George Scott, Andrew Hosie, George F. H. Marks, Ralph Holyoake, Thomas Du B. Whaite, Henry T. Knaggs, Ferdinand S. Le Quesne, V.C., Robert H. Penton, D.S.O., Willington S. Dowman, and Albert L. F. Bate.

The undermentioned Majors are placed on retired pay (dated July 28th, 1906):—James Moir, Henry A. Cummins, C.M.G., George Bent, Edward S. Marder, Charles W. Allport, Thomas Browning, Robert N. Buist, and William J. Trotter.

The undermentioned Captains to be Majors:—John P. Silver (dated July 28th, 1906); Stephen W. Sweetnam (dated July 28th, 1906); William S. Harrison (dated July 29th, 1906); and Harry A. L. Howell (dated July 29th, 1906).

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain Eustace M. Callender to be Surgeon-Major (dated July 25th, 1906). Surgeon-Lieutenant Montague S. W. Gunning to be Surgeon-Captain (dated July 24th, 1906). Surgeon-Captain Arthur H. L. Stewart, having resigned his commission in the Imperial Yeomanry, ceases to belong to the Army Medical Reserve of Officers.

VOLUNTEER CORPS.

Royal Engineers (Volunteers): 1st Newcastle-on-Tyne: Surgeon-Captain H. H. Gourley resigns his commission (dated August 4th, 1906).

Rifle: 7th Volunteer Battalion the Royal Scots (Lothian Regiment): Surgeon-Lieutenant-Colonel J. B. Ronaldson is borne as Supernumerary whilst holding the appointment of Brigade-Surgeon-Lieutenant-Colonel, Senior Medical Officer, 2nd Lothian Volunteer Infantry Brigade (dated July 1st, 1906). 1st Volunteer Battalion the East Yorkshire Regiment: Supernumerary Surgeon-Captain H. G. Falkner to be Surgeon-Major, remaining Supernumerary (dated August 4th, 1906). 2nd Volunteer Battalion the Royal Scots Fusiliers: Eric Dalrymple Gairdner to be Surgeon-Lieutenant (dated July 15th, 1906). 2nd Volunteer Battalion the Gordon Highlanders: Surgeon-Lieutenant G. P. Craver resigns his commission (dated August 4th, 1906).

Correspondence.

"Audi alteram partem."

THE MEAT OF THE PEOPLE.

To the Editors of THE LANCET.

SIRS,—My attention has been directed to a letter appearing in THE LANCET of July 28th, signed "Peripateticus," in which the writer offers the opinion that New Zealand frozen mutton is neither so nutritious nor so digestible as English meat. Your correspondent, however, submits no proof in support of this opinion. Consequently his statement can have little weight. I desire, however, to point out that the relative merits of New Zealand and English mutton have frequently been considered by those closely concerned in the question. Among other tests to determine this I would mention those made a few years ago by the *Hospital* experts when, after exhaustive experiments with New Zealand frozen mutton and Scotch mutton, these gentlemen reported that "the New Zealand meat, weight for weight, has a greater amount of food constituents if the fat be taken into account" and that "the digestibility of the meat is all important from the invalid's standpoint, and remembering that New Zealand meat is very commonly indeed used for the patients' diets, it is very reassuring to find that the freezing process does not to any appreciable extent render it less easy of assimilation, or constitute a drawback to its use for persons of feeble digestive powers." I inclose herewith a report of the tests referred to, from which you will see that the assertion that New Zealand frozen mutton is neither so nutritious nor so digestible as English mutton is completely refuted.

I am particularly gratified to note the kind reference of "Peripateticus" to the watchfulness and care with which the whole process of preparation of meat for the English market is carried out in New Zealand. That "there is no question of suspicion as to cleanliness or purity or careless inspection in the colony" is a testimonial that at the present moment, when consumers are so doubtful on these special points, is doubly welcome. With the substitution and sale of New Zealand meat as English the New Zealand producer has no sympathy. He would prefer that the product of the colony was altogether sold to consumers here on its merits and at its proper market value. He considers the sale of New Zealand meat as English at English price a fraud upon consumers that should be stopped by law.

I am, Sirs, yours faithfully,

W. P. REEVES,
High Commissioner for New Zealand.

Victoria-street, London, S.W., August 1st, 1906.

THE PROMOTION OF SCIENTIFIC RESEARCH.

To the Editors of THE LANCET.

SIRS,—In view of the appeal made in the presidential address at the meeting of the British Association yesterday for funds for research in relation to disease, I shall feel obliged if you will permit me to make some observations upon certain aspects of my scheme for the promotion of scientific research which have reference to the endowment of research and which may be readily overlooked on a cursory consideration of it. I made no allusion to these aspects of the scheme in my letter appearing in THE LANCET of Sept. 30th last, which refers to a leading article upon the scheme in a previous issue of your journal. The scheme, I may remind you, defines conditions under which public moneys may be allocated to grants for discoveries of prescribed descriptions, and it formulates a course of procedure whereby the fulfilment of such conditions may be ascertained. The procedure is, as you will have observed, largely analogous to patent law procedure. No provision in the scheme restricts an applicant's or intending applicant's power to assign a grant to which he may become entitled. Any such applicant or intending applicant may therefore assign a part or the whole of a prospective grant for a valuable consideration in a manner somewhat analogous to that in which an inventor of a patentable invention may dispose of a share or the whole of his patent rights in such invention.

It will be obvious that where researches directed to the making of discoveries, for which the grants may be obtained, are maintained out of any endowment fund, those having control of such fund could make it obligatory upon any research worker receiving remuneration, or being otherwise assisted out of such fund, to assign for the purposes of the fund a part or the whole of any prospective grant which such worker might succeed in obtaining. Such an obligation might be equitably imposed where coöperative research work, maintained by any institution, may issue in results for which grants could be obtained.

Public moneys may be allocated in conformity with the principles of the scheme to grants for discoveries which elucidate the nature or causation of, or which diminish the mortality due to, a specified disease from which the mortality is great. The scheme provides for the periodical investigation of discoveries forming the subject matters of application for the grants, the maximum amounts of which are to be prescribed as provided by Clauses 22, 29, and 41 of the scheme. If the disease be of so widely prevalent and terrible a nature as, say, cancer the amount of such grants may be justifiably large. And it will therefore be seen that if by means of an endowment fund, such as, for example, the Imperial Cancer Research Fund, discoveries are made of the description referred to, the scheme, if it were in operation, might be the means of adding materially to the amount of such fund. State aid, it will thus be apparent, might be obtained indirectly under the provisions of the scheme for endowed institutions, without especially favouring any individual, or class of individuals, applying for the grants. I therefore hope that when the scheme is more fully understood support may be gained for it as well from endowed institutions as from those who are desirous that provision be made for research independently of such institutions.

I am, Sirs, yours faithfully,

WALTER B. PRIEST.

Verulam buildings, Gray's Inn, W.C., August 2nd, 1906.

APPENDICITIS AND PROFESSOR BLANCHARD.

To the Editors of THE LANCET.

SIRS,—Professor Blanchard of Paris is stated to have announced that the above dangerous malady is caused by the ova of tænia trygocephalus and of two others which he does not name, and he says that he and Metchnikoff found these ova in each of a considerable number of appendices which they examined. Blanchard is also stated to speak of these ova as "parasites," a word not applicable to the ovum, which could only become the perfected parasite by passing through the alternate generation of hydatid in an intermediary bearer. Unfortunately I have no access to Blanchard's *ipsissima verba* and am obliged to accept the version of the daily press, and I may be misled.

I felt it to be my duty to study that singular page of natural history "helminthology" some 35 or 40 years ago, when labouring so hard to get sewage used as a manure instead of as a poison. In this I always had your whole-hearted support, and with your commissioner, Dr. Stallard, I had frequent communication in those old days, but it is now, I suppose, 30 years since I found myself writing to THE LANCET. I come out of my shell now because Blanchard, having abolished appendicitis without an operation by a few drops of thymol, is said to state as a fact—but without apparently the slightest attempt at investigation—that these ova are due to the chemically treated sewage of Paris and London used to force vegetables in market gardens. Unfortunately for Blanchard, and still more unfortunately for London, none of its sewage is now converted into vegetables, the sludge being carried by a large fleet at huge cost far out to sea to poison fish, and the liquid being still used for the pollution of the Thames and as poison for its fish and riverside population.

Since 1862 I have fought many battles in favour of the use of sewage as manure instead of as a poison, and yet in 1906 here comes Professor Blanchard with a new and absolutely groundless libel on what I used to describe as the liquor humanitatis. In 1865 the great Liebig attacked me in a series of letters in the *Times*, on chemical grounds, under a

series of very curious mistakes. I defeated him with great slaughter and I still preserve his autograph letter admitting his mistakes. In 1871 Dr. Spencer Cobbold, F.R.S., the great helminthologist, attacked me with enthusiastic impetuosity as an enemy of the human race trying to disseminate intestinal diseases by sewage irrigation. But I had anticipated such an attack and eventually he signed judgment against himself, as may be found in the fourth report of the committee of the British Association on the "Treatment and Utilisation of Sewage," at pp. 188, 189 of the forty-first report of the Association.

This is the story. On my Romford experimental sewage farm I had taken a calf the parents of which had been fed on sewage grown produce since before his conception, as soon as he could be taken from his mother (which was still being fed on sewage-grown produce), devoted him to science, and kept him in a roomy box for 22 months. In very wet or very cold weather he received at times a little hay or straw, merely enough dry food to keep him in health; otherwise he was fed exclusively on sewage-grown produce; and my object being to give all entozoal individuals a fair chance, he was given only the *rakings* from the Italian grass after the swaths had been carted off, and the outside leaves of cabbages, mangold, and sugar beet, or these roots when no grass or leaves were available. On the day appointed for the sacrifice Professor Marshall, F.R.S., the great surgeon, and Professor W. H. Corfield, both of University College, and some more of my colleagues on the committee (I think Dr. J. H. Gilbert, F.R.S., Dr. A. Voelcker, F.R.S., and Dr. A. W. Williamson, F.R.S.) were present and Dr. Cobbold himself was in special charge of the necropsy. To assist him and Professor Marshall and Professor Corfield I had present two veterinary surgeons and two butchers and the dissection lasted all of a long summer day.

The following are the principal passages in Dr. Cobbold's report: "..... I have to report the perfect freedom of that animal from internal parasites of any kind. I attribute this marked negative result to the following circumstances. First, the animal did not graze on the farm but was fed exclusively upon vegetable products cut and carried from the land. Secondly, the porous nature of the soil and subsoil alike would rapidly carry off the sewage and thus insure the passage of parasitic germs into the soil itself. Thirdly, I noticed on the irrigated portions of the farm a remarkable absence of those molluscan and insect forms of life which frequently play the part of intermediary bearers. ..... Fifthly, the flaky vegetable tufts collected by me from the sides of the furrows occupied by sewage currents consisted chiefly of *Batrachospermum moniliforme*, in the filaments of which were numerous active nematodes, but no ova of any true entozoon. ..... As some guarantee for the efficient manner in which the carcass of the ox was examined I may mention that the superficial muscles with their associated areolar and aponeurotic coverings were particularly investigated, portions of certain muscles such as the scaleni and sterno maxillaris being dissected through and through. All the viscera were likewise scrutinised, especially the brain, lungs, liver, bladder, kidneys, paunch, reed, cæcum, and other natural divisions of the intestinal canal."

Remarks by the committee.—"..... Those members of the committee who were present and examined it"—the ox—"with Dr. Cobbold concur in his statement as to its perfect '*freedom from internal parasites of all kinds*'"—the italics are the committee's. "They especially draw attention (1) to the fact that on this farm there is 'a remarkable absence of those molluscan and insect forms of life which frequently play the part of intermediary bearers' to entozoal larvæ; and (2) to the composition of the 'flaky vegetable tufts' collected from the sides of the carriers. These contained 'numerous active free nematodes but no ova of any true entozoon.' It appears, then, that as far as this one case goes (and it is certainly as conclusive as a single case could possibly be), there is no evidence that entozoal forms of life are to be found on the farm at all in any stage of their existence or in the flesh of an animal fed exclusively for 22 months on sewaged produce grown on the farm."

The veterinary surgeons and the butchers said that they had never seen any ox so entirely healthy in every way, with no trace even of old disease, and they and everyone present asked me how I accounted for such a phenomenon. I replied that my explanation was very simple—namely, that the ox was specially watered from the house well and not from a horse-pond. What I myself thought was just remotely possible was that ova or hydatids of T. mediocanellata might have been discovered, for it was probable that many thousands of these ova must have come on to the farm in the 22 months, but, as I believe, not in a condition of vitality. Their absence and that of all other forms of entozoal life in the ox was, I venture to think, the triumph of scientific sewage irrigation, so admirably summed up in Frankland's three words, "intermittent downward filtration," which no doubt carried them down into the soil.

I served on the above committee for seven years and I regret to say that all my colleagues have, alas, gone over to the majority except Dr. W. Odling, F.R.S. Sir John Lubbock, F.R.S. (now Lord Avebury), is happily also living, but though nominally a member of the committee, he only acted as treasurer, as our labours were outside his ordinary scientific work and were without the poetic charm of his researches. But the work of the committee was of such great scientific and practical importance that I feel it to be a duty to the country, to the association, and to my much lamented colleagues, with whom I worked so long and with such pleasure, to exhume their forgotten but invaluable work, and I feel sure that both Dr. Odling and Lord Avebury will warmly support that view.

I leave to the medical profession the questions: 1. Whether the presence in an appendix of any entozoal ova can, and must, produce appendicitis. 2. Whether a few drops of thymol, which is a mild antiseptic, taken by the mouth, can find their way—while still antiseptic—to the appendix. 3. Whether having done so, and having destroyed the ova, these will remain for ever harmless. 4. Whether by the microscope an experienced observer can distinguish, for certain, between the ova of the T. trygocephalus and, say, of the T. echinococcus of the dog, so frequently present in stable manure used in market gardens.

I am, Sirs, your obedient servant,

W. HOPE,
Colonel.

Parson's Green, July 24th, 1906.

SUGGESTIONS FOR THE FUTURE OF CONSUMPTIVE PATIENTS OF THE WORKING CLASSES.

To the Editors of THE LANCET.

SIRS,—It is well that more thoughtful attention is being given to the question of the future occupation of consumptive patients, drawn from the working classes, who have been under treatment in chest hospitals or open-air sanatoriums. All those who have any real knowledge of this class of patient are fully alive to the unpractical advice often meted out to these people. Resident medical officers and others in charge of such institutions are bound to be confronted, on discharging their patients, with the question, "What work am I to do?" and to answer such a question and to offer advice worth the having as to a future occupation present what appear to be almost insuperable difficulties in many cases.

Only to-day I was led to advise a skilled worker to return to his workshop and to a situation which had been kept open for him, as on his own showing the conditions were not absolutely undesirable, and he himself was penniless and had no means of obtaining equally remunerative employment in the open air or under more favourable conditions. The patient was surprised, as he had on more than one occasion been told of the excessive danger to himself of resuming his old calling and been urged to seek light open-air work. It is essential that members of the medical profession should avoid, so far as possible, this flat contradiction of each other if any real progress is to ensue, and therefore we welcome as a stimulus to thoughtful consideration of a problem which is daily forcing itself upon all those who have any share in teaching the working-class consumptives the article in THE LANCET of July 28th, p. 217, by Dr. M. S. Paterson and Dr. F. C. Shrubsall. The routine advice so long adopted both in hospital and general practice, "get open-air work," is almost useless. The difficulties besetting the healthy in search of such occupations are too well known to be repeated and much misery and suffering to themselves and their families have resulted from even genuine seekers after "outdoor" employments. We run the risk of creating loafers of the very worst type and swelling the ranks of the unemployed and unemployable by holding up "open-air work" as a *sine quâ non* to men who eventually become content to be

supported by their wives. Of such results we cannot be proud.

On the other hand, we must not lose sight of the many difficulties which lie before the consumptive who has to return to indoor occupations, especially if this follows immediately on discharge from open-air hospitals or sanatoriums. Our own experience tells us how absolutely distasteful and opposed to the highest work of mind or body is the vitiated atmosphere of a crowded factory or workshop, especially after a sojourn in the pure air of the country, where the contrast is so marked. Even if the means for thorough ventilation are provided and opportunities are given to our ex-patients to disseminate the teaching imparted while under medical treatment in our sanatoriums, such apostles of hygienic conditions of life lay themselves open to more or less serious trouble and are voted an unbounded nuisance. To use a spitting flask is to openly court disaster and to ask for open windows brings suspicion in its train. Small wonder, then, that many of them under such depressing and disheartening conditions give up their newly acquired habits and therefore relapse.

To take one instance out of many that could be brought forward, school teachers, who naturally realise the absolute necessity of hygiene, tell us that the attitude of the parents makes it impossible to ventilate schoolrooms and therefore the majority of those in the scholastic profession who have been unfortunate enough to contract the disease resolve at once, when they realise their own needs and the almost impossibility of any real fulfilment of hygienic conditions, to seek some other employment.

Dr. F. W. Burton-Fanning has been pointing out for some considerable period that every ex-patient need not necessarily seek "outdoor employment." He says: "In many cases it is far more important to stipulate that the work involve no fatigue or physical strain, and if the employment involve restriction of fresh air this must be sought more thoroughly during leisure hours."[1] The medical staff of this hospital (I speak for the time of my own connexion with it) has from time to time been pointing out that the sweeping condemnation of all indoor work was absurd and that many of the patients would be doing themselves more harm than good by changing their occupation and giving up their position as skilled workers for the chance of outdoor employment, which was at the best of times remote. It would seem a wiser expenditure of energy to concentrate our attention on the conditions under which our patients have to return to work, without at the moment having regard to the nature of the work itself. Nor is it easy to obtain an adequate idea of these conditions from the patients and the ideal advice as to their suitability would seem to be that founded on a personal investigation. Nor can we ignore the fact that some patients continue to do well under the most adverse conditions. We have an ex-patient who has been in the hospital four times during the past 12 years. He worked in an underground bakehouse and informs us that he rarely does less than 12 hours a day. He comes into the hospital for a short stay and then returns to work again, keeping quite well in the intervals, despite the fact that he was assured by the physicians of a leading chest hospital 12 years ago that if he did not get open-air work he could not live. Needless to say, he does not continue such an occupation at our suggestion, but the case is a remarkable example of the resisting power of some patients, even in the most unfavourable circumstances.

The article in THE LANCET of July 28th does not deal with women workers. The majority of our women patients are domestic servants of one class or another. Once let it be known that they have been under treatment and there are few, if any, situations open to them, and of these a great many prove absolutely unsuitable when the long hours, heavy work, and unsatisfactory sleeping accommodation are taken into account. To advise such persons to attempt to carry out the treatment they have learned is a counsel of perfection which is quite unattainable. On the other hand, what is to be the alternative? The usual alternatives offered to men mentioned by Dr. Paterson and Dr. Shrubsall—viz., "going to sea" and "emigration"—one had almost thought were obsolete. To recommend an ex-patient to seek a steward's or purser's berth on board ship would never be seriously entertained by anyone who knew anything of the disease on the one hand or of the conditions of life on board ship on the other. The idea that "emigration" is a panacea for all the ills that our patients are heir to has been dispelled by the experience of emigrants themselves. As regards work on farms or in gardens it is only necessary to point out that very few employers in the country districts can afford to be philanthropists in these days and therefore they cannot give a living wage to men who hardly know how to handle a spade properly. We are, it seems to me, bound to admit that in nearly all the cases the best chances consist in returning to the old work with a new knowledge of how to grapple with the conditions under which that work is to be carried out.

If we can impress upon some of them the advisability of procuring work in the smaller towns in preference to the large cities, even at a less wage, if they can thereby spend their leisure hours more easily in the open country, we shall have attained something. Real work may be done to supplement the educative system of our hospitals and sanatoriums by seeking to induce employers of labour to improve the hygienic conditions of factory and workshop. And even in face of the many difficulties which beset the whole subject we must still hope that the general public will become more enlightened, so that when our patients return to their old occupations they will meet with efforts on all sides to help them to continue their more hygienic mode of life instead of, as is so often the case, having real obstacles put in their way.

I am, Sirs, yours faithfully,

W. G. KINTON,
Resident Medical Officer, Mount Vernon Hospital for Consumption and Diseases of the Chest, Northwood, Middlesex.

August 1st, 1906.

To the Editors of THE LANCET.

SIRS,—I was very glad to read the article by Dr. M. S. Paterson and Dr. F. C. Shrubsall which appeared in THE LANCET of July 28th under the above heading. Little good is likely to come of recommending ex-sanatorium patients to seek work in country districts, especially if such have to leave the ranks of skilled to swell the ever-increasing ranks of unskilled labour.

Surely the remedy lies in so improving the sanitary condition of our factories and workshops that the skilled workman may go back to his job with a fair chance of maintaining that improvement in health gained by sanatorium treatment. I am aware that there are great difficulties to be overcome before such an ideal state of affairs can be brought about in this country. Nevertheless, such difficulties are not insuperable, and once overcome are likely to afford a more rational solution to a vexed problem than would be the finding of special unskilled occupation for skilled men.

The writers' remarks as to sea-going and emigration are, from a New Zealand standpoint, particularly opportune, especially as regards the latter. Few physicians when they glibly advise a consumptive working man to go to the colonies can realise the adverse conditions under which the unfortunate patient has to travel, especially if the weather be bad and the emigrants have to pass most of their time in cabins which under the best conditions are crowded and ill ventilated. What man would advise, knowing the true conditions, such a patient a purser's mate's job in a small cabin or the stuffiness of the steward's "glory hole"? Many and many consumptive patients have I seen who have arrived at New Zealand ports in varying stages of the disease with no friends to go to, with no knowledge of the country, and with very little money. I can call to mind many instances where within two or three months of arrival such unfortunate persons have been on the charitable aid rates of the colony. That patients should be sent out under such conditions is neither fair to themselves nor to the ratepayers at large. In New Zealand we are doing all that can be done towards stamping out the scourge of tuberculosis. Sanatoriums are being established in various parts of the colony by public subscription and Government subsidy, and though in New Zealand the consumption death-rate is only about half what it is in this country there are no special advantages of climate sufficient to compensate a poor consumptive for risking the disadvantages of a long voyage in search of a "cure" which can for the most part be obtained at his own door and within comparatively easy reach of those most intimately concerned in his welfare. Moreover, legislation exists and is likely to be more stringently enforced to prevent the indigent consumptive from landing on New Zealand's shores.—I am, Sirs, yours faithfully,

T. H. A. VALINTINE D.P.H., M.R.C.S. Eng., L.R.C.P. Lond.,
Assistant Chief Health Officer of New Zealand.

Farnborough, Hants, July 30th, 1906.

THE INFECTIOUSNESS OF TYPHOID FEVER.

To the Editors of THE LANCET.

SIRS,—I hope you will excuse my boldness in venturing to demur to your dictum in THE LANCET of July 28th, p. 245, on the infectiousness of typhoid fever. I do so in the interests of public health, which must suffer very seriously if the weight of your great authority is thrown in the scale when so momentous a question as to the danger of infection from a particular disease comes to be decided. This is not merely a theoretical point but one of the greatest importance in proper sanitary administration all over the country. Let me appeal in the first place to pathology. Surely typhoid fever is as much a disease of the blood as typhus fever or any of the other exanthemata. The skin, the lungs, the spleen, the liver, and the pharynx come to be affected and not merely the glands of the small intestine. In the case of the pharynx particularly the bacillus typhosus has been found both in the living and dead subjects; and if so, why should it not be carried in the sputa and expectorated as spray in the breath just as tubercle bacillus is carried from person to person? In the second place, appealing to experience, did not the American commission on the diseases of the Cuban campaign find irrefragable proof of infection by personal contact? I have been constantly seeing cases of typhoid fever for nearly 50 years and have over and over again met with examples of personal infection. Two of my assistants have fallen victims to the complaint in attending patients, and in our hospital here three nurses have been so infected. In my own family one of my assistants infected my own children; and my son, by the stupid bungling of the authorities who placed the enteric fever cases into immediate proximity of the surgical lines in the hospital where he was working, had the trouble so badly as to just escape with his life.

Now, Sirs, I can well believe that this evidence does not completely convince the advocates of water-borne typhoid fever and that form of infection alone. But if there be merely room for the smallest doubt on the point surely it is not far short of criminal not to take every precaution against the spread of the disease by *every* possible channel of *any* kind. As a medical officer of health I at least would feel guilty in all such cases if I did not attempt to shut the door against every imaginable source of spreading disease.

As to providing opportunities to students to become acquainted clinically with typhoid fever, it must surely be in the eyes of those who do not believe in personal infection of vastly more importance that the raw practitioner should be able to diagnose properly such diseases as small-pox and typhus fever, which he can only become acquainted with in isolation hospitals. If, as cannot be gainsaid, he ought to study these latter complaints by the bedside then he must go where such diseases can be seen, and while so occupied surely he may take advantage of the opportunity to make himself acquainted clinically with typhoid fever as well. On every ground, then, let us exclude this latter disease from general hospitals and let me add—parenthetically—phthisis as well.

I am, Sirs, yours faithfully,

WILLIAM BRUCE, M.D. Aberd.,
Medical Officer of Health of Ross and Cromarty.

Dingwall, July 30th, 1906.

DEATH FROM OVERLYING.

To the Editors of THE LANCET.

SIRS,—May I, through the medium of your columns, draw attention to a case of death from overlying in which the external post-mortem appearances were unusually definite. I was called early one Sunday morning to see a child 14 days old who was found dead in bed by its mother. The history briefly was this. After visiting several public-houses the mother, who carried her baby with her, was brought home in a drunken condition by friends. They undressed her and put her to bed and placed the baby close to her right side. This was between the hours of 11 and 12 at night. When she awoke in the early hours of the morning she found her baby dead.

On examining the body at 7.30 on Sunday morning I found rigor mortis well marked. The face was of a uniform dusky hue, and there were large patches of the same colour on the chest, abdomen, and on the front of both legs. The right forearm was flexed on the arm and the thumb was clenched by the fingers. The right thigh was flexed on the abdomen, and the big toe was strongly extended at the metatarso-phalangeal joint. The limbs on the left side presented nothing noticeable. The body was removed to the public mortuary and a post-mortem examination made at 3.30 P.M. on the same day. The appearances were the same as at the earlier hour, save that rigor mortis was not so marked and that post-mortem stains were forming at dependent parts. The discolouration of the skin had not altered in position. Pressure with the finger on the cheek did not cause blanching of the skin. The lips were purple. A bloody froth which was not noticeable early in the day had now exuded from both nostrils.

The post-mortem appearances in death from overlying are extremely unsatisfactory and the medical man can often find nothing on which to base an opinion. In this case, however, with the clear history of a healthy infant being placed near its drunken mother, the post-mortem appearances were pronounced. Exudation of a bloody froth from both nostrils is not mentioned as a sign in either of the two text-books I have at hand (Dixon Mann's and Aubrey Husband's). Dixon Mann writes that the mucous membrane of the larynx and trachea is sometimes found injected and may be covered with frothy mucus, possibly blood-stained (Forensic Medicine, p. 226). He quotes Lambert, who examined the dead bodies of several children who were killed from compression of the chest in a stampede from a public building and in a majority of these Lambert noticed froth surrounding the mouth and nostrils. Aubrey Husband writes that the presence of froth about the mouth is not constant and is a common occurrence in those dying from natural causes.[1] It is worth noticing that although the child's nose and mouth presented nothing remarkable at 7.30 A.M. yet at 3.30 in the afternoon a bloody froth extended from both nostrils almost to the chin. General convulsion of all the muscles of the body is one of the stages of asphyxia. The reason why it was noticeable only on the right side may have been because the child lying close by its mother had the left half of its body fixed down by her weight whilst its right was free to contort and twist. The discolouration of the face was a noticeable feature of the case. It resembled the face of a child deeply cyanosed from congenital heart disease, the "morbus cæruleus." The cheek blanched under pressure of the finger but the deep colour gradually returned, and when the body was again examined in the afternoon the face was completely suffused. The body had lain several hours in the mortuary in the dorsal position and post-mortem stains were visible in the dependent parts, but the colour of the face persisted. Turgescence due to throttling passes off, as a rule, shortly after death.

I am, Sirs, yours faithfully,

JOSEPH A. W. PEREIRA, M.D. Brux.

Exeter, August 3rd, 1906.

SPASMUS NUTANS.

To the Editors of THE LANCET.

SIRS,—I have just read with interest the article in THE LANCET of July 28th by Dr. G. F. Still on "Head-Nodding with Nystagmus in Infancy." About a year ago a case came under my notice in hospital which differs in some respects from the cases just published by Dr. Still. I must apologise for not giving a definite history, as I have no notes of it and I have to rely on my memory entirely. It was in a girl, aged five years, who was admitted to hospital for the removal of her tonsils and adenoids. Although she did not show any active signs of rickets she was wasted and ill-nourished and was for that reason kept in hospital for a fortnight after the operation, and it was during the first week that the head-rolling was observed, it gradually lessening under the careful treatment given in hospital.

The exciting cause, however, I feel sure was the presence of pediculi on the scalp. On admission the head was in a terrible state, and it was only after it was cleansed and she was placed on nourishing diet that the cure of the spasmus nutans was accomplished. In addition to the head-nodding she exhibited marked symptoms of nystagmus, but I am unable now to state if one eye was more affected than the other—a point so much emphasised by Dr. Still. She

[1] Handbook of Forensic Medicine, p. 101.

also had a very bad internal strabismus in both eyes, for which she was wearing convex glasses.

The case seems to me the more interesting now after reading Dr. Still's paper, as the age of the child does not tally with the ages of those reported and also I find no mention of the pediculus capitis as a cause of head-nodding. I may say that it was always when sitting up that she rolled her head, that the movement was from side to side, that the nods were quite 100 to the minute, and generally lasted for a period varying between one and two minutes, but that there was no regularity of time between the spasms.

I am, Sirs, yours faithfully,

North Kensington, W., August 1st, 1906. HAROLD MOWAT.

MEDICAL PRACTICE IN SOUTH AFRICA AND ITS COMPLICATIONS.

To the Editors of THE LANCET.

SIRS,—South Africa may be divided into two parts—the veld where there are no medical men and the towns where there are too many. One consequence of this unequal distribution of the profession is that the farmer on his "plaas" on the lonely illimitable veld has to treat most of the ailments of his household. He has a "pelikaan" for tooth extraction and his wife has her "apotheek"—a box full of the locally renowned Dutch medicines,[1] such as Haarlem oil, Spanish fly, Hofman's drops, &c., but these have of late been supplemented by pink pills, bile beans, liquozone, and the host of modern remedies whose praise is in all the newspapers. Any old "tante" is the midwife for the neighbourhood and any farmer acts as gravedigger and undertaker when required. Sometimes a medical man has to be fetched from a great distance, but only rich families can afford this, for the fees are a guinea an hour, and ten hours are easily spent on the long roads. Medical knowledge gained by recognised methods of study and observation is, as a rule, not very highly esteemed by the "Boeren," who have a decided preference for the "wonderdokter," and in 1899 there was in the Transvaal a famous specimen of the last-mentioned class of practitioner. During the war he was in Cape Town and the Dutch Afrikanders there believed in him. His fame had, in fact, spread all over South Africa. The Afrikanders are like one big family—what happens in the Transvaal is soon known in Cape Town and *vice versâ*. "Dr. Eugen," as he was called, was quite a celebrity. From far and near the farmers travelled to Pretoria in 1899 to consult him. There was always a file of carts and wagons in his street and inside his door was a crowd peacefully waiting. A consultation always lasted five minutes and the fee was one guinea. As soon as the patient came forward the "dokter" laid both his hands on the former's head and something like an electric current was supposed to pass between healer and subject. The "dokter" knew at once what was wrong. He did not prescribe medicines as he was not possessed of any diploma, but the leading feature of his treatment consisted in regulation of the patient's diet. After his electrical diagnosis he sat in his big armchair and consulted his "spirits" about the different foodstuffs and beverages to be given or withheld. As a rule the farmer had to give up his coffee and wine, which was indeed a very hard trial to the Boer. During winter "Dr. Eugen" left Pretoria for the river Zambesi, where he lived on "drill fish," as they call the torpedo or cramp fish. In this way he got a new store of electricity for the next season! Sometimes a rich farmer fetched him for an urgent case to his house. This was extremely expensive and the "doctor" would never take the ordinary food placed before the Boer and his family but only a fowl prepared in his own way. Oom Paul Kruger, the late President of the Transvaal Republic, had little faith in this "wonderdokter." He sent for him once but when Eugen began to "consult his spirits" the President asked him to what kind of spirits he was talking. "Are they in heaven?" "I do not think so," was the answer. "Then go," said Oom Paul.

Perhaps there is no part of the world in which patent medicines have such a vogue as in South Africa. Since the greater part of the population come into the world, live, and die without professional aid domestic medicines and some hereditary skill on the part of the farmers have the field much to themselves. No wonder that in this country the newspapers and periodicals, whether daily, weekly, or monthly, contain so many advertisements of patent medicines and preparations for invalids. In a recent issue of the *Cape Times*, our leading newspaper, the following may be counted: (1) Savaresse's Sandal Capsules; (2) Doan's Kidney Pills; (3) Wolfe's Schnapps (pictures of 18 tired men!); (4) Carter's Liver Pills; (5) Larola (for the skin); (6) Co-Do (for the mouth); (7) Montserrat; (8) Cockle's Antibilious Pills; (9) Apiol and Steel Pills; (10) Steedman's Soothing Powders (for children cutting their teeth); (11) Zam-Buk (in the news columns); (12) Bile Beans (in the news columns); (13) Sheldon's Digestive Tabules (for indigestion, dyspepsia, &c.); (14) Chamberlain's Cough Remedy; (15) Jones's Rheumaticuro (for sciatica); (16) Vichy-célestins (for gout, diabetes, &c.); (17) Koppa (for the hair); (18) Chicago Cold Cure (cures a cold in 24 hours); (19) Cooper Neuralgia Cure; (20) Beecham's Pills; (21) Towle's Pills (invaluable to ladies); (22) Wood's Great Peppermint Cure; and (23) Dr. Sheldon's New Discovery. It may here be remarked parenthetically that in the English papers such advertisements in the news columns are always marked *Adv.* Dutch papers may take them without any addition and as a rule with deceptive headlines. Once there was almost a quarrel between the editor and the director of *Ons Land*; the former said: "My readers must see *Adv.* under such articles." "No," said the latter, "our shareholders have our first care." Dr. Sanden's electric belt occupies an advertisement space of about 50 square inches in every issue of our leading papers, Dutch and English, but the pink pills have been much less conspicuous of late. Perhaps this is caused by the harshness of our legislators. Before the new Custom tariff came into force on May 25th the agent for the pink pills paid only a trifling *ad valorem* duty on 7*d.* per 1000, this being the value as per invoice. But now he has to pay £1 sterling for one pound avoirdupois, which is a very different thing. Of course, the farmers are the best customers for patent medicines, but as some of them read little more than their Bibles and a weekly church paper—*De Kerkbode* or *De Vereeniging*—it is no wonder that even these religious papers get a good share of advertisements from the patent medicine vendors, so that next to a highly poetical and edifying explanation of some passage of Holy Writ there may be found a most prosaic paragraph on diseases and their treatment. Every druggist keeps a fairly complete stock of patent medicines as far as he can get hold of them, but some nostrums are not yet to be found in any drug store, because the agents do not wish to surrender any portion of their profits.

Medical men are not popular with the people, not even with the town people, partly because they are said to charge very high fees and partly because they are supposed to be required only for treating diseases of the teeth and for performing operations in which cutting and sewing are necessary. In cases of internal ailments the general idea is that the cheapest and easiest way is to go to a chemist and ask his advice. In 1901 and 1902 there was perhaps as much venereal disease in Cape Town as in any town on the globe, and most of these cases of syphilis and gonorrhœa were treated without a medical man. One druggist had 500 venereal patients in a month and all dealers in medicinal substances laid in full stocks of mercurials and santal midi to be disposed of to customers coming for advice and treatment.

As a rule the Boers succeed very well in rearing their large number of children. At Standerton there is a family with 29 children. When I lived in a farming district in the Transvaal for a year I found that between 10 and 15 children in every house was the average and very few infants died. In Cape Town, however, more than 50 per cent. of the children die in their first year and even among the white people the death-rate is large. Our town council discussed the question in January last with the result that a duly qualified nurse now goes round to the houses where there are infants, examines the little ones, and gives the parents good advice.

I am, Sirs, yours faithfully,

Cape Town. C. J. VAN RIJN.

[1] Many pharmaceutical chemists announce in gold letters on their windows that they sell Dutch medicines.

CARDIFF AND SWANSEA HOSPITALS.

To the Editors of THE LANCET.

SIRS,—The grounds for your unfavourable criticism in THE LANCET of July 28th of the management of the Swansea Hospital as compared with that of Cardiff for the year 1905 appear to be the relative cost per bed as furnished by your correspondent. These were—Swansea, £71 19*s.*; Cardiff,

£64 5s. 4d. Your correspondent in arriving at these results has in the case of Swansea taken the *total* ordinary expenditure, £8214, and divided it by the average number of beds occupied (114·12), with the result (£71 19s.) as the cost per bed, but in the case of Cardiff has taken from the total ordinary expenditure, £12,745, a sum of £2606, leaving a balance of £10,139, which he has divided by the average number of beds occupied (157·77) with the result (£64 5s.) as the cost per bed. These results are two totally different costs per bed, there being no connexion whatever between them, and any comparison must be absurd. When the expenditure of both hospitals is compared according to the standard laid down by Sir Henry Burdett and adopted almost universally by the London and provincial hospitals, and taking into account the out-patients, painting, and bank charges in both cases, the result would be as follows:—

Year.	Swansea.		Cardiff.	
	Cost per bed after deducting 1s. 6d. for out-patients.	Cost per bed on total ordinary expenditure.	Cost per bed after deducting 1s. 6d. for out-patients.	Cost per bed on total ordinary expenditure.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1903	57 0 0	60 5 0	70 15 0	79 15 0
1904	60 0 0	63 12 0	72 0 0	80 15 0
1905	68 0 0	71 19 0	74 0 0	84 10 0

This is not time to criticise the standard adopted by Sir Henry Burdett or to question the right of the Cardiff authorities to adopt any standard they may think fit but if the expenditures of two hospitals are to be compared it can only be done satisfactorily by adopting a common standard for both.—I am, Sirs, yours faithfully,

W. LLEWN. MORGAN, Lt.-Colonel.
Swansea, August 7th, 1906. Chairman, House Committee.

JUVENILE SMOKING.

To the Editors of THE LANCET.

SIRS,—Your annotation in THE LANCET of July 28th, p. 241, on Juvenile Smoking leaves absolutely untouched the point made months ago by the Lord Advocate of Scotland—viz., that cigarettes can be fetched by the bigger boys and secretly sold or given by them to their younger brothers or companions, in which way the proposed legislation would be rendered a dead letter. To suggest that this difficulty is insuperable seems absurd. Yet amid all the writers on the subject not one has told us how to meet the point, nor, strange to say, does the Select Committee make any suggestion. I am, Sirs, yours faithfully,

July 30th, 1906. OBSERVER.

TWO POINTS OF MEDICAL ETHICS.

To the Editors of THE LANCET.

SIRS,—With reference to the letter of "I.M.S." in THE LANCET of July 28th, p. 258, I submit the following opinions.

1. As to "shameful" diseases your first duty is to your employer. The medical officer is employed by the Crown—the person who pays the piper calls the tune—and the sick person has joined the service in full understanding of this fact and, of course, the disease must be stated accurately on the returns. No one can expect you to make and sign an incorrect official statement. Take the case of a man unfit for duty from alcoholism. When you are sure of your diagnosis it must be at once officially reported. If not, you probably show a bad example to, and thereby degrade, your subordinates; you prejudice the service; you very rarely gain anything for your patient, except a putting off of the evil day which will come, and the trouble which follows generally recoils on yourself and serves you right.

2. Officers under treatment by private practitioners. It is most unlikely that a civil practitioner would see without inquiry an officer who was, *a priori*, probably the patient of another. In the unlikely case (I am not talking of consultations which I always encouraged, they comfort the patient and often help you) you may deal with the civil practitioner directly and, of course, if the interruption of your treatment has prejudiced the case, clearly it is your duty to report that to the patient's commanding officer; unless, of course, your withers are wrung and conscience tells you you can do better next time. In this case pocket your experience and put it to profit.

I am, Sirs, yours faithfully,

July 31st, 1906. R. N.

THE INSPECTION OF PORK IN IRELAND.

(FROM A CORRESPONDENT.)

A QUESTION of great importance came before the Belfast corporation on August 3rd—that is, how to deal with the carcasses of swine affected with tuberculosis. The market committee carried a motion[1] to the effect that when the lesion was strictly confined to the glands of the neck the head and neck should be destroyed and the rest of the carcass returned to the owner, but that where two or more organs were affected the whole of the carcass should be destroyed. The committee followed in its regulation the practice in Glasgow, Dublin, and Edinburgh, and in Germany, but when the matter came up for confirmation before the city council it was decided to send back the resolution to the markets committee for further consideration on the ground that the 1898 Royal Commission on Tuberculosis had stated that "in view of the greater tendency to generalisation of tuberculosis in the pig we consider that the presence of tubercular deposit in any degree shall involve seizure of the whole carcass and of the organs"

This matter raises several very interesting subjects for discussion. Everyone admits that proper and thorough inspection is necessary, but many believe that the view of the 1898 Royal Commission cannot, with the evidence accumulated since it reported, be maintained. First, on what evidence is it established that there is a "greater tendency to generalisation of tuberculosis in the pig"? In the case of the very pigs seized recently in Belfast the most careful experiments made microscopically and by injecting the flesh of the animals into guinea-pigs (which are so sensitive to tuberculosis) have totally failed to demonstrate or to produce the disease, though in these same pigs the glands removed were tuberculous. Among the most complete and authoritative treatises on meat inspection is that of Dr. Ostertag, professor in the Veterinary High School at Berlin, and in the fourth edition of his great "Handbook of Meat Inspection," translated in 1904 by Dr. Wilcox, veterinary editor, Experimental Station Record, Washington, with an introduction by Dr. Mohler, chief of the Pathological Division, United States Bureau of Animal Industry, the whole question is very fully discussed. It is demonstrated that the experience of the pathological anatomists shows in the most unambiguous manner that the meat of tuberculous animals plays only an inconspicuous rôle in the etiology of human tuberculosis. With reference to the view generally entertained that in undoubted cases of local tuberculosis the meat is harmless, Dr. Ostertag says: "The assumption of the harmlessness of meat in cases of undoubted local tuberculosis will probably remain for all time as an immutable dogma of meat inspection"; while in reference to the current notion that the generalisation of tuberculosis is always associated with a harmful property of meat Dr. Ostertag says that this can no longer be maintained, for, according to him, "only under certain conditions, and not uniformly, does the generalisation of tuberculosis produce a harmful property in the meat." It is clear that the opinion of the 1898 Royal Commission cannot be regarded as unchallenged, however perfect the counsel conveyed. Secondly, even were such a rigid meat inspection found to be necessary, it is absurd that it should be applied by one local authority and not put in force by another. Why should carcasses be condemned in one place which would pass in another where there is a less rigid inspection, or none at all? It is common in several of the smaller Irish towns for pigs to be bought and "cured" without any inspection at all, and what is still more ridiculous, the meat of these animals is sent into Dublin and Belfast where it is used without being inspected at all in its "cured" state. Many hold that meat inspection should be taken out of the hands of the local authorities. The Government could then adopt one uniform method

[1] See THE LANCET, August 4th, 1906, p. 327.

of meat inspection based upon scientific veterinary and medical knowledge. No one wishes to consume the tuberculous meat of any animal, even though cooking renders it harmless, but, while taking every proper precaution by inspection to get rid of such a risk, it must be clearly recollected that the meat of a tuberculous animal plays a comparatively small rôle in the causation of human tuberculosis. The so-called panacea of meat inspection must not be allowed to draw away attention from other important factors in the causation of consumption.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

Liverpool Infirmary for Children.

SINCE the appeal for £10,000 for this institution first appeared sums amounting to £1500 have been subscribed and a further sum of £500 has been promised conditionally on the balance being raised. £13,000 are still required to complete the new building, but of this amount £5000 have been voted by the city council provided the balance is raised by the public. Unless the greater portion of £5000 is contributed by the end of September favourable contracts for the unbuilt portions will lapse and the completion of the infirmary will be indefinitely delayed. The committee is earnestly asking for help to complete the work.

Infantile Mortality in Liverpool.

Infantile mortality is continuing to be a cause of great anxiety to the health committee of the city council. Allusion was made in THE LANCET of July 28th, p. 263, to the provision of special beds at the Royal Infirmary for the treatment of infantile diarrhœa, at the suggestion of the health committee. I have now to record that a similar suggestion was received on July 25th by the West Derby guardians from Dr. E. W. Hope (the medical officer of health) requesting their assistance in mitigating the effects of certain infantile complaints which are causing many deaths amongst young children. The guardians in response have allotted a couple of wards at Belmont-road workhouse for their reception.

Death of Dr. Felix B. O'Flaherty.

By the death of Dr. F. B. O'Flaherty, which occurred on August 1st from cardiac disease, a promising and comparatively young practitioner has been removed from our midst. He was one of several brothers, some of whom fought on the British side in the late Transvaal war, and one of whom lost his life. The interment took place on August 3rd at Flaybrick cemetery, Birkenhead, in the presence of a large concourse of sympathising friends. The deceased was only 45 years of age.

Infantile Mortality in Cheshire.

Mr. Francis Vacher (the medical officer of health of the county of Cheshire) in his annual report for 1905 states that the proportion of infants who died was 9 per 1000 births less than in the whole country, and the proportion of infantile deaths in the municipal boroughs was 22 per 1000 more than in the 76 great towns of the kingdom. This is a fair record as regards the whole county but is a decidedly bad record as regards the municipal boroughs. The variation in weather conditions and the incidence of epidemics influence the general death-rate from year to year and as surely increase or decrease the mortality among infants. The infantile mortality-rate being high in a particular year might be due to the incidence of sun and rain, the passing of a wave of epidemics, and such recondite causes; but the infantile mortality-rate being high year after year in some special district, or part of a district, is not to be explained in this ready way, so that no one can be made responsible. A high infantile mortality-rate in any district must be due to local insanitary conditions in that district, which it behoves the local authority to discover and to remedy. The main causes of a high rate of infantile mortality may be summed up as follows: (1) the employment in factories of those about to become mothers and those who have been recently confined and should be nourishing their infants; (2) the infants of factory-employed mothers being badly cared for and ill fed during the absence of their mothers at work; (3) the environment of the infant being insanitary; (4) there being no provision for isolating infectious children or disinfecting infectious bedding, &c.; and (5) the ignorance common among working women as to how an infant should be fed, clothed, and managed.

August 6th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Newport Corporation Bill.

ALTHOUGH the Police and Sanitary Committee of the House of Commons did not approve of all the clauses in the Improvement Bill recently promoted by the corporation of Newport, important provisions have been obtained and they will make for more effective public health administration in the borough. The difficulty of fixing the responsibility for negligent drain-laying and similar work upon the proper person has long been felt. As Mr. T. Pridgin Teale said long ago, if a platelayer places rails so that they overlap and in consequence a train is overturned and some person is killed, that platelayer would be put upon his trial for manslaughter: why cannot the same be done in the case of a drainlayer who lays a line of drains so negligently that a fatal case of typhoid fever is the result? It will in the future be possible to punish such negligence in Newport, for Section 4 of the Corporation Act provides that "if a water-closet or drain is so constructed or repaired as to be a nuisance or injurious to health the person who undertook or executed such construction or repair shall, unless he shows that such construction was not due to any wilful neglect or default, be liable to a penalty not exceeding twenty pounds." A difficulty which is not confined to Newport has been experienced in connexion with the repair of drains. Where these are newly laid or are re-constructed there are already sufficient powers of inspection but in the case of ordinary repairs this is not so. The clause intended to deal with this difficulty was allowed by the committee of the House of Lords and required that 12 hours' notice should be given by any person who desired to repair a drain which should be left open for a period not exceeding 24 hours in order that it might be inspected. The chairman of the police and sanitary committee, however, considered this to be unreasonable and the section as it now stands merely requires notice to be given of the intention to repair and gives free access to officers of the corporation for inspection purposes. The sanitary officers have power under the Act to test drains (though not by water under pressure) when they have reason to suspect that such drains are defective. An attempt has been made to meet the difficulties which have arisen owing to the conflicting definitions of a drain in those districts where the Public Health Acts Amendment Act, 1890, is in force. A drain is defined to include any sewer or drain either already constructed or to be constructed with which two or more houses or premises (whether belonging to the same or different owners) are now or may at any future time be connected. The blowing or inflating of meat is prohibited. The sections referring to tuberculosis in connexion with milk supplies are identical with those in the Rhondda and other private Acts. They include provisions prohibiting the sale of milk for human consumption from cows suffering from tuberculosis of the udder; requiring the isolation of diseased cows and notification to the medical officer of health, giving more or less complete powers of inspection both within and without the district, together with the taking of samples of milk and the summary stoppage of particular supplies. Other sanitary provisions have reference to the regulation of the manufacture and sale of ice-creams. The corporation is also empowered to make by-laws for preventing the pollution of water which it is authorised to take, even though the contamination of the water may take place in another sanitary district.

The West Wales Sanatorium.

At a meeting of the building committee of this institution which was held recently at Alltymynydd it was reported that the sanatorium was approaching completion. The committee hopes that the public will make a generous response to the appeal for further funds which was issued not long ago and anticipates that great assistance will be rendered by the working classes.

Physical Training.

The first of the competitions organised by the Glamorganshire county council for the physical improvement of the

children of the county took place at Porth on July 14th. Five towns entered for the competition and Porth was awarded the shield.

The Vaccination of School Teachers.

At a meeting of the Gloucestershire education committee held on July 28th the subcommittee recommended that the committee do not consent to the recognition under Article 11 (e) of the Code for 1906 of teachers who have not been vaccinated. Article 11 (e) provides that "no teacher will be recognised who has not produced a medical certificate satisfactory to the board or who has not been vaccinated. Except that, with the consent of the local education authority, an unvaccinated teacher who has declared to the board his conscientious objection to vaccination may be recognised." An amendment was moved to the effect that no advantage would be secured by refusing to appoint unvaccinated teachers, but this was lost by a large majority, and the subcommittee's recommendation was adopted.

The Western Branch of the British Dental Association.

The annual meeting of the Western Branch of the British Dental Association was held at Exeter on July 20th in the new building of the Devon and Exeter Dental Hospital, Exeter. The secretary reported that the branch had 96 members and that the financial position was satisfactory. Mr. T. A. Goard delivered the presidential address, in which he dealt principally with unqualified practice and the evils of advertisement. Mr. J. C. Wing (Ilfracombe) read a paper on the Strengthening of Vulcanite Dentures, and demonstrations were given by Mr. J. J. H. Sanders, Mr. W. H. Lyne, Mr. J. H. Gartrell, and Mr. F. T. Haycroft. The annual dinner was held in the evening at the Rougemont Hotel.

The Winsley Sanatorium.

At a meeting of the Bristol health committee held on July 17th the financial position of the Winsley Sanatorium was discussed at considerable length. It was stated that the liabilities of the institution amount to £15,000. The capital sum charged to public authorities for beds by the committee of the sanatorium was much below the actual cost, scarcely more than half, and even if the bodies to whom beds have been allotted pay £100 per bed additional, as has been suggested, the sum will not approach the actual outlay. If this course were generally taken, however, it would relieve the pressure that has arisen, and if the charitable public were to subscribe as well a satisfactory state of affairs would be arrived at. The health committee did not come to any definite decision as regards increasing the contribution to the sanatorium. The city of Bristol has 20 beds in the institution and it is hoped that more money will be forthcoming.

The Didworthy Sanatorium, Dartmoor.

The annual meeting of the subscribers to this institution was held on July 31st under the presidency of the Earl of Mount-Edgcumbe. The sanatorium was opened in 1903 with accommodation for 14 patients, but recently the institution has been enlarged to receive 35 patients, although, unfortunately, owing to lack of funds it has not been possible to keep the beds always occupied. The medical report stated that 66 patients had been admitted during the year ended April 31st and the results had been very satisfactory. The financial statement showed an unfavourable balance of £38. Sir Massey Lopes has endowed the institution by investing £500 in Consols for that purpose, and it is hoped that a greater amount of financial help will be given to the sanatorium so that the good work which it is performing may not have to be curtailed.

August 6th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Medical Appointments to the Glasgow Post office.

FOLLOWING upon the death some time ago of Dr. William Dougan, who had been medical officer to Glasgow Post-office for a considerable number of years, the Postmaster-General decided to make a new departure in connexion with the appointment. Owing to the growth of the department, and the consequent increase in the number of officials employed, it was deemed inadvisable to continue the system of appointing only one medical officer to be exclusively in the service of the establishment. The postal area was divided into six districts and it was decided that a medical officer should be attached to each, the gentlemen appointed being at liberty to engage in private practice. In reply to the advertisement of the positions about 300 applications were received. The Postmaster-General has now made the following appointments: Central district, Dr. D. Watson; western district, Dr. R. O. Adamson; southern district, Dr. W. Lawson; eastern district, Dr. J. Patrick; northern district, Dr. J. McKie; and Govan, Dr. R. Y. Anderson.

Anthrax in Glasgow.

During the past fortnight two cases of anthrax have been admitted to Belvidere Hospital. Both patients were employed in hair works and had worked with hair in its natural state. In the case of the first patient South American and English horsehair were used in the factory at which he worked. When inquiry came to be made none of the English hair remained on the premises, and the South American hair gave a negative result on bacteriological examination. The duties of the second patient consisted in receiving and opening on arrival bales of hog's hair from America. Here also the bacteriological inquiry was negative. The situation of the sore in both cases did not suggest infection through a dust-laden atmosphere, but by inoculation through a superficial abrasion on the arm. The medical officer of health, however, has pointed out to the health authorities the danger that arises during the process of teasing the hair. In both factories in which the cases occurred the raw hair after unpacking is teased and mixed by machinery, and during the process, despite the fact that fans are attached to the machine, a considerable quantity of dust is produced. Should any consignment of hair contain anthrax this dust-laden atmosphere must constitute a very grave danger to the workmen.

Tinned Sardines as a Diet for Young Children.

Another series of cases of illness after partaking of tinned food was reported last week by the Glasgow district police. The food at fault was a tin of sardines purchased in a shop in the Southern district and partaken of by a family residing in the district. About one and a half hours later the four children who had partaken of the food developed alarming symptoms and were removed to hospital where they were treated for ptomaine poisoning and ultimately recovered. That there may have been something wrong with the food in question cannot be denied, but the worst feature of the incident is the ages of the children who partook of the food. The oldest was aged five years and the others respectively four years, two and a half years, and nine months. It seems appalling that it is possible for such gross ignorance or carelessness to exist, and it throws some light upon the difficulties with which municipal authorities have to contend in grappling with the problem of the large mortality among children who are reared in cities. The parents are aliens residing in the city, but this does not lessen the gravity of the case so far as the municipal authorities are concerned, for it has come to be recognised that if any improvement in infantile mortality-rate is to be effected it is just this class of parents that will have to be got at and educated.

Practical Inspection of Meat.

A subcommittee of the town council of Glasgow is considering a letter from Professor John Glaister, who states that it has been remitted by the Faculty of Physicians and Surgeons of Glasgow to the President of the Council and himself to approach the corporation requesting its coöperation in the establishment of a course of teaching on meat inspection and of the diseases of animals communicable to man. It has been suggested that this class should be conducted by the chief veterinary surgeon of the corporation.

Hygiene and Salubrity.

The town council of Glasgow has received a letter from the committee of the Association for the Promotion of Hygiene and Salubrity in Dwellings, intimating that the second International Congress of the Association will be held in Geneva from Sept. 4th to 10th. The committee requests that the municipality will be represented at the congress by an official delegation, which would bring forward the fruit of its experience and take part in the discussion of the reports presented.

August 7th.

IRELAND.

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Much disappointment has been caused among the Poor-law medical officers of Ireland by the refusal of the Prime Minister to appoint an Irish medical man to succeed the O'Conor Don as a member of the Royal Commission in connexion with the Poor-laws.

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At a meeting of the Belfast city council held on August 1st a letter was read from the Local Government Board, saying "they will be glad if the council will take an early opportunity of reconsidering the recommendation of their public health committee, so that effect may be given to the Board's views concerning the desirability of offering a higher salary than £600 a year for the very responsible position of medical superintendent officer of health of a city of the size and population of Belfast." The Lord Mayor suggested (and this plan was adopted) that the public health committee should consider this letter and said that, if necessary, he would call the council in committee.

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The report of this asylum for the year 1905 shows that there was nothing of exceptional interest in the character of the cases admitted (163—83 males and 80 females), the type being in the main melancholia with much associated organic and functional disease. The deaths numbered 58, the chief causes being heart disease (21) and pulmonary tuberculosis (14). The average cost of maintenance of each patient was, calculated on the gross expenditure, less repayment of loans, £23 11*s.*, while the net average cost was £22 2*s.* 4*d.* (that is, after deducting repayment of loans, receipts from paying patients, and other miscellaneous receipts). So far as the administrative history of the asylum is concerned, the year may be regarded as one of quiet progress. The increased recovery rate, the reduced death-rate, the freedom from escapes, accidents, and violence, the very rare occasions on which seclusion or restraint was adopted, the improvement in general health, and last, but not least, the still further reduction in average cost of maintenance, all denote a development in the right direction and indicate that the demands made on the institution are adequately met. As a county institution in a comparatively poor country it fulfils the function of dealing as efficiently and economically as possible with the acutely insane and the chronic class of lunatics.

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August 7th.

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The Indo-Chinese Medical Service.

AT a meeting of the Academy of Medicine held on July 24th M. Kermorgant read a report on the working of the Indo-Chinese Medical Service. Great progress has been made by the authorities who have already established a number of medical stations, isolation hospitals, maternity hospitals, and the like. They have also told off, for every consular post, certain medical officers to render medical aid to the natives and to notify and to deal with epidemics. The good results of this useful department are already evident by a marked fall in the death-rate and in the frequency of epidemics.

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striking essays were sent in on the question of milk distribution in large towns. Four prizes in all were allotted. This competition and the essays submitted therein are the advance guard of the International Congress on the Hygiene of Diet which is to be held at Paris from Oct. 22nd to 27th.

Poisoning by Tincture of Arnica.

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Sequestra of the Temporal Bone removed through the Auditory Canal.

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August 7th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Appendicitis.

IN the Berlin Medical Society there have lately been prolonged discussions on the subject of appendicitis, the frequency of which is causing a certain amount of anxiety among the general public. An unusual event at one of the meetings of the society was the presence of Count Posadowsky, the Secretary of State for the Interior, who attended because a collective investigation of the whole question is about to be made on behalf of the Imperial authorities. Owing to the great number of speakers the discussion extended over three meetings, so that this year the society continued its sessions until August 1st, although the recess usually begins in the middle of July. Notwithstanding the heat of the weather the three meetings were well attended. In his introductory remarks the President, Professor von Bergmann, said that the present discussion would be devoted only to questions of diagnosis and treatment, pathology, etiology, and operative procedures would not be gone into. Dr. Kraus, professor of clinical medicine, in describing the symptoms of the disease, said that the clinical phenomena were often not in accordance with the anatomical lesions, so that errors of diagnosis were rather frequent. Slight attacks might be treated by medicines given internally, but every case in which the symptoms continued for more than 24 hours must be operated on without further delay. Professor Heubner said that with children operation should be the rule, as in them the disease was more serious than in adults and a fatal issue was more frequent. Professor Orth, the successor of Professor Virchow, said that in about 10 per cent. of the cases operated on the appendix was found to be normal on microscopical examination. On the other hand, appendicitis was found in post-mortem examinations of persons who had died from other diseases or from accidents and in whom no symptoms of appendicitis had been recognised during life. Hæmorrhages into the mucosa of the appendix were not always a symptom of appendicitis but might be the result of injury inflicted during the operation. Professor Israel discussed the question of operating in the interval between acute attacks and said that an operation was not necessary after a purulent appendicitis, in which obliteration of the appendix usually occurred, and when two years have elapsed since the last attack. An operation was indicated (1) when there were chronic pains issuing from the appendix; (2) when several attacks have happened within one year; (3) in pregnant women; and (4) in children. An operation was also to be recommended when a woman expected to become pregnant or when the patient was very nervous about a relapse, or when there was a prospect of the patient residing in a place where surgical aid was not available. It was safer to operate in a quiescent interval than to wait for another attack, because about 50 per cent. of the patients were liable to relapse and because the mortality in operations during the interval was much smaller than in operations during an attack. Professor Rotber said that diagnosis was not so difficult as was supposed. Pain in the right hypogastric region, nausea, and fever were prominent symptoms. His practice was to operate at once, even in the prodromal stage. Dr. Nöggerath described some experiments in which he was able to produce hæmorrhages in the appendix by ligature of the mesenteric vessels; hæmorrhage was therefore not a symptom of appendicitis. Dr. Guttstadt of the Royal Statistical Office reported that the number of cases of appendicitis registered in the Prussian hospitals was 8412 in 1903 and 10,793 in 1904, and that the proportions operated on in these years were 40·4 per cent. and 44·23 per cent. respectively. The majority of patients were of ages between 15 and 25 years. A commission was then appointed to carry out a collective investigation in accordance with the instructions given by the Imperial authorities.

Myiasis Intestinalis.

At a recent meeting of the Verein für Innere Medicin Dr. Wirsung read a paper on Myiasis Intestinalis. He said that grubs of flies were constant parasites in the skin, the intestines, and the naso-pharyngeal cavity of animals. He had seen three cases of this kind in the human species. One of the patients was a child one year of age, in whom a dozen full-grown grubs of the common fly were discharged from the bowels without any pain. Another was a child, five years of age, who passed 13 living grubs of the common fly after the occurrence of some symptoms of colitis. The third patient was a rachitic boy, four years of age, suffering from chronic enteritis, in whom symptoms of fœtid lientery had developed. On the administration of calomel and naphthalin about 50 grubs were passed. The effects produced by this condition were, as a rule, not striking enough to allow an exact diagnosis to be made.

Professional Secrecy.

An interesting decision of fundamental importance was lately given by the High Court of Justice at Leipsic. A woman had contracted syphilis from a man and after his death recovered damages from his brother and heirs. The medical attendant of the deceased was summoned as a witness, but declined to give evidence on the ground that the law imposes silence on medical men as to facts concerning their patients. The plaintiff's counsel, on the other hand, asserted that professional secrecy was no longer binding after the death of the patient. The High Court decided that only the patient himself was competent to release his medical attendant from the obligation of professional secrecy, and since he had not done so it must be presumed that he did not wish the facts concerning his illness to be made public after his death.

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(FROM OUR OWN CORRESPONDENT.)

Appendicitis.

IN the Berlin Medical Society there have lately been prolonged discussions on the subject of appendicitis, the frequency of which is causing a certain amount of anxiety among the general public. An unusual event at one of the meetings of the society was the presence of Count Posadowsky, the Secretary of State for the Interior, who attended because a collective investigation of the whole question is about to be made on behalf of the Imperial authorities. Owing to the great number of speakers the discussion extended over three meetings, so that this year the society continued its sessions until August 1st, although the recess usually begins in the middle of July. Notwithstanding the heat of the weather the three meetings were well attended. In his introductory remarks the President, Professor von Bergmann, said that the present discussion would be devoted only to questions of diagnosis and treatment, pathology, etiology, and operative procedures would not be gone into. Dr. Kraus, professor of clinical medicine, in describing the symptoms of the disease, said that the clinical phenomena were often not in accordance with the anatomical lesions, so that errors of diagnosis were rather frequent. Slight attacks might be treated by medicines given internally, but every case in which the symptoms continued for more than 24 hours must be operated on without further delay. Professor Heubner said that with children operation should be the rule, as in them the disease was more serious than in adults and a fatal issue was more frequent. Professor Orth, the successor of Professor Virchow, said that in about 10 per cent. of the cases operated on the appendix was found to be normal on microscopical examination. On the other hand, appendicitis was found in post-mortem examinations of persons who had died from other diseases or from accidents and in whom no symptoms of appendicitis had been recognised during life. Hæmorrhages into the mucosa of the appendix were not always a symptom of appendicitis but might be the result of injury inflicted during the operation. Professor Israel discussed the question of operating in the interval between acute attacks and said that an operation was not necessary after a purulent appendicitis, in which obliteration of the appendix usually occurred, and when two years have elapsed since the last attack. An operation was indicated (1) when there were chronic pains issuing from the appendix; (2) when several attacks have happened within one year; (3) in pregnant women; and (4) in children. An operation was also to be recommended when a woman expected to become pregnant or when the patient was very nervous about a relapse, or when there was a prospect of the patient residing in a place where surgical aid was not available. It was safer to operate in a quiescent interval than to wait for another attack, because about 50 per cent. of the patients were liable to relapse and because the mortality in operations during the interval was much smaller than in operations during an attack. Professor Rotber said that diagnosis was not so difficult as was supposed. Pain in the right hypogastric region, nausea, and fever were prominent symptoms. His practice was to operate at once, even in the prodromal stage. Dr. Nöggerath described some experiments in which he was able to produce hæmorrhages in the appendix by ligature of the mesenteric vessels; hæmorrhage was therefore not a symptom of appendicitis. Dr. Guttstadt of the Royal Statistical Office reported that the number of cases of appendicitis registered in the Prussian hospitals was 6412 in 1903 and 10,793 in 1904, and that the proportions operated on in these years were 40·4 per cent. and 44·23 per cent. respectively. The majority of patients were of ages between 15 and 25 years. A commission was then appointed to carry out a collective investigation in accordance with the instructions given by the Imperial authorities.

Myiasis Intestinalis.

At a recent meeting of the Verein für Innere Medicin Dr. Wirsung read a paper on Myiasis Intestinalis. He said that grubs of flies were constant parasites in the skin, the intestines, and the naso-pharyngeal cavity of animals. He had seen three cases of this kind in the human species. One of the patients was a child one year of age, in whom a dozen full-grown grubs of the common fly were discharged from the bowels without any pain. Another was a child, five years of age, who passed 13 living grubs of the common fly after the occurrence of some symptoms of colitis. The third patient was a rachitic boy, four years of age, suffering from chronic enteritis, in whom symptoms of fœtid lientery had developed. On the administration of calomel and naphthalin about 50 grubs were passed. The effects produced by this condition were, as a rule, not striking enough to allow an exact diagnosis to be made.

Professional Secrecy.

An interesting decision of fundamental importance was lately given by the High Court of Justice at Leipsic. A woman had contracted syphilis from a man and after his death recovered damages from his brother and heirs. The medical attendant of the deceased was summoned as a witness, but declined to give evidence on the ground that the law imposes silence on medical men as to facts concerning their patients. The plaintiff's counsel, on the other hand, asserted that professional secrecy was no longer binding after the death of the patient. The High Court decided that only the patient himself was competent to release his medical attendant from the obligation of professional secrecy, and since he had not done so it must be presumed that he did not wish the facts concerning his illness to be made public after his death.

Medical men in Germany may therefore henceforth decline to give evidence affecting deceased patients.

A Visit of French Medical Men.

A party of French medical men belonging to the Œuvre de l'Enseignement Mé ical Complémentaire, a society for post-graduate study, is about to come to Germany for the purpose of visiting the medical institutions of the country. The tour will include several of the larger cities, such as Cologne, Frankfort, Leipsic, and Munich, as well as some of the university towns, such as Bonn, Heidelberg, and Marburg. Three days will be spent in Berlin. A committee has been formed here under the presidency of Professor von Bergmann to entertain the French visitors and to show them the various sights.

August 6th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Psychology of Mountaineering.

TO DAY, the Feast of Our Lady of Snow, appears appropriate to the discussion of the "Alpine question" which in many journals, professional and lay, has been provoking animated controversy under a variety of headlines, from "Il Diritto di Rompersi il Collo" (the right to break one's neck) to "La Psicologia dell' Alpinismo" (the psychology of mountaineering). And certainly there is one aspect of the question which is of present interest—the jeopardy seemingly inseparable from "peak-storming" and the loss of life already so considerable in the season now passing. From Domodossola, on the Italian side of the Simplon, a correspondent writes to me under date August 3rd:—"The week just ended has been simply tragic in mountaineering annals. Within eight days the deaths among the 'Alpinisti' have been nine. The last two months, moreover, have registered no fewer than 20 fatal casualties—the latest being that of Christian Zimmermann, who fell headlong from the Burgenfüh, and that of J. Burckart who while gathering edelweiss dropped down a precipice—both men picked up quite dead and horribly mangled." Still, in spite of these warnings the Alpine mania, as some call it, betrays no tendency to diminish; nay, it appears so steadily on the increase as to have prompted scientific inquiry into its etiology, its "prophylaxis," and its cure. Without reverting to Conrad Gessner's "De Admiratione Montium" which, published in the sixteenth century, marks the first enthusiasm for Alpine exploration—an enthusiasm originating, characteristically enough, not in the Latin but in the Teutonic civilisation—there is no doubt that within the last 70 years the passion for ascending to altitudes above the snow-line has from decade to decade gained in intensity till, from being the distinction of a few, it has become the obsession of thousands, organised into clubs and animated by a spirit of competition quite international. Beginning on the northern aspect of "the water-shed" it has infected the southern or Latin side so powerfully as to make the Italian a formidable rival to the German not only in deeds of daring and in the observation and research, which in the eyes of many are its redeeming concomitants, but even in the vindication of it as a means of physical and moral discipline—a palæstra, in short, out of which its votary emerges a more virile and effective citizen. "Alpinisti," like the late Quintino Sella and the happily surviving Angelo Mosso, have no equals in this latter pleading—Mosso's work, in particular, marking an epoch in the utilisation of mountaineering in the scientific, hygienic, and educative sense. To the compatriots of these pioneers belongs the classification of Alpine clubmen into three distinct groups: (1) the nature student, (2) the artist, and (3) the sportsman. Under this last head a recent Italian "Alpinista" dwells enthusiastically on the benefit already wrought on his compatriots by the intelligent, circumspect, and systematised practice of mountaineering, and predicts for it a future which will see the Latin race emerging from its "shallowness, effeminacy, and weakness, moral as well as physical," into a truly "Anglo-Saxon virility of mind and body." So pursued, mountaineering becomes a real "palæstra vitæ" and merits all the encouragement it is receiving from the Italian medical schools, particularly those of Genoa, Turin, Pavia, and Padua. Its disadvantages, not to say dangers, will disappear in proportion as the scientific element impregnates and controls its practice, and this element Professor Mosso has inculcated and driven home in treatises already classic which in foreign renderings enjoy a popularity far beyond their original public. In the first place, like all discipline, it must find its votary in a condition, mental as well as physical, adequate to the demands it makes on him. He must not enter upon it till his mind has been cleared, his physique braced, and his endurance or "staying power" ascertained. How many cases, Mosso has asked, in which the victim has been found dead at the bottom of a crevasse, are to be explained not by unsteady footing or non-recognition of danger but by cardiac lesion declaring itself at the critical moment when all the energies of mind and body should have been at their best! The tragic death, some ten years ago, of Baron Peccoz on the Lyskamm in the presence of the Queen of Italy, set down at first to a misplaced step, was afterwards shown to be due to arterio-sclerosis—to a cardiac condition that contra-indicated the exercise of which he and his Royal companions were so passionately fond. With such precautions as medical diagnosis can suggest and with such practical guidance as experience has put on record, the danger, seemingly inseparable from mountaineering, ought to be minimised and its benefits reaped with a smaller percentage of casualties than the traveller is exposed to on the railway or the motor-car. Such is the net result of the vivacious and interesting discussion on "Alpinismo" which has been enlivening the Italian press these last few weeks, and if its lessons are intelligently put in practice we can sympathise with the forecast of Sella and Mosso when they saw in mountaineering a "palæstra vitæ" conducive to a development which in the case of Italian youth particularly is equivalent to a moral and physical rehabilitation.

August 5th.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The following is a list of the scholarships, prizes, and medals awarded for the session 1905-06: Class Prizes.—Practical pharmacy, S. J. Lee; chemistry, E. W. Hall and S. L. Tressider (equal); biology, R. C. J. Doughty and E. W. Hall; organic chemistry, G. O Teichmann; histology, R. W. Annison and A. O. English (equal); physiology, R. W. Annison; practical anatomy, J. B. Tackaberry; anatomy, H. G. Kilner and J A Rose (equal); pathology, R. M. Peake; bacteriology, E. L. Kennaway and C. F. Robertson; forensic medicine and public health, E. L. Kennaway; psychological medicine, C. H. S. Webb; practical midwifery, R. M. Peake; practical surgery, C. F. Robertson; practical medicine, J. T. Daly; midwifery, C. H. S. Webb; and medicine, E. L. Kennaway. Scholarships, &c.: Second year's exhibition, H. G. Kilner; Leopold Hudson prize, M. L. Hine; Lyell medal and scholarship, A. C. Morson; the governors' prize, M. L. Hine; Hetley clinical prize, M. L. Hine; Freeman scholarship, F. E. W. Meadows; and Broderip scholarships, M. L. Hine and F. E. W. Meadows, equal.

THE UNITED OPERATIVE PLUMBERS' ASSOCIATION.—At a meeting of the United Operative Plumbers' Association of Great Britain and Ireland held at King's College on July 31st there was a large attendance, including representatives of the building trade and various public bodies. Sir Albert K. Rollit, who presided, supported by the general secretaries of the Trades Unions of Stonemasons, Plasterers, Carpenters and Joiners, and others, expressed on behalf of the governors and council of King's College their warm appreciation of the services rendered to the educational work of the College by the Plumbers' Company and the Carpenters' Company. He referred to the great impulse given to the cause of technical education generally by the guilds of London. The master of the Plumbers' Company (Mr. W. D. Carõe) referred in the course of an excellent speech particularly to the practical coöperation set up between the plumbers and the public health and water authorities in regard to the regulations affecting the health of the community and the greater economy in the distribution and use of water for domestic and other purposes. He alluded to the perfection of the work of the middle ages and later period and dwelt upon the hereditary character of the training of craftsmen and the reverence for accumulated experience. Mr. Randall, on behalf of the association, expressed their appreciation of the aid rendered by the Plumbers' Company to maintain the principle of apprenticeship as the basis of training for the craftsmen and called attention to the influence often exercised by the spirit of commercialism overruling the spirit of craftsmenship by looking to the output of work rather than the quality and finish of the product.

MEDICINE IN TORONTO.

III.[1]

THE POSITION OF MEDICINE IN ONTARIO IN 1850, WITH AN ACCOUNT OF SOME OF THE MEDICAL INSTITUTIONS AT THE PRESENT TIME.

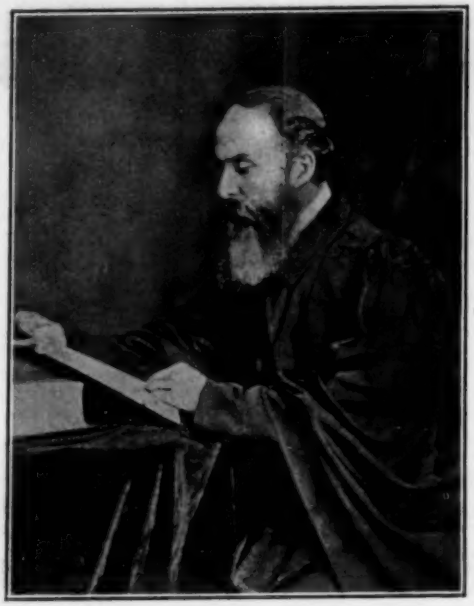
OUR last article dealt mainly with the history of the Medical Faculty of the University of Toronto previous to 1850, and discussed the steps taken in regard to its foundation. Before going further into the history of the development of the medical school in connexion with the University we may well consider more fully than we have done the establishment of Trinity College Medical School and some other of the medical institutions of Toronto, as well as the part played by the Medical Board of Upper Canada, which counts for much in the history of the medical profession which it served.

As stated in the first article, the board was organised by Act of Parliament in the year 1815, and, in the words of the Act, was endowed with the authority to examine all persons desirous to apply for a licence to practise physic, surgery, and midwifery, or either of them, within the province of Upper Canada, and being satisfied with such examination that any person is duly qualified to practise physic, surgery, or midwifery, to certify the same under the hands and seals of two or more of such board, in order that a person so applying may obtain a licence. The board consisted of five or more persons, and from the year 1815 up to 1865, with the exception of a lapse of less than two years when the College of Physicians and Surgeons had its short existence from 1839 to 1841, performed its functions ably. Dr. Christopher Widmer was for many years president of this board. The course the board pursued in the examination of candidates in 1847 was as follows. First, some acquaintance with Latin was required of a candidate. With this view, if a candidate could not construe some paragraphs of Gregory's Conspectus, a portion of the Pharmacopœia Londinensis or a Latin prescription was substituted; in the event of a total failure in these the professional examination was not proceeded with. If the Latin examination was satisfactory then followed, secondly, materia medica and pharmaceutical chemistry; thirdly, anatomy and physiology; fourthly, the theory and practice of medicine; fifthly, practical surgery; and sixthly, midwifery and the diseases of children. It will be gathered from the above that the examination was for that period fairly comprehensive, and the board seems to have fulfilled its duties conscientiously and with due regard to the interests of the public and to the dignity of the profession. The board continued its meetings up to the year 1865 when it was finally dissolved, its functions having been much superseded.

The establishment of Trinity College Medical School has been referred to cursorily. It was mentioned that its establishment was owing to the fact that the State University of King's College had been wrested from the control of the Church of England. The then Bishop of Toronto, Dr. Strachan, took up the matter in the interests of the Church of England population of Ontario, and in April, 1850, went to Great Britain with the object of securing a charter for a Church of England university to take the place of King's College. Sectarian feeling ran high in Ontario in those days, as is shown by a statement made by the bishop on the eve of his departure for England. He said: "The College or University of Toronto is founded on the ruins of King's College, whose royal charter it has repealed, under the pretence of amending it, and whose endowment of eleven thousand per annum, though secured by a patent from the Crown and guaranteed by the pledge of three kings, it has seized and appropriated to itself." In the course of the summer of 1850 Dr. Hodder and Dr. Bovell projected and organised a school of medicine which was advertised as the Upper Canada School of Medicine. When the Bishop of Toronto who had succeeded in obtaining a charter, returned from England, a deputation from this school waited upon him and tendered their services as the medical faculty of the projected university. This offer was accepted, the Upper Canada School of Medicine became the medical faculty of the new Church of England University, and lectures were commenced at once. The Medical Faculty, indeed, commenced its duties in the autumn of 1850 before a beginning had been made with the erection of a university building.

Professor Macallum, in reference to the old Trinity Medical Faculty, informs us that it became defunct about 1858 and between its decease and the foundation of Trinity School of Medicine (which became Trinity Medical College in 1878) 15 years elapsed. The Faculty of Medicine of Trinity College in 1850 consisted of the following members:—Professors: Obstetrics, Dr. E. M. Hodder; Institutes of Medicine, Dr. James Bovell; Surgery, Dr. Henry Melville; Anatomy and Physiology, Dr. U. Bethune; Practice of Medicine, Dr. F. Badgley; and Materia Medica and Therapeutics, Dr. W. Hallowell. Of these the best known were Dr. Hodder and Dr. Bovell. We published a portrait of Dr. Hodder in the previous chapter, together with a brief note on his life. Dr. James Bovell, his colleague in the foundation of the Trinity Medical Faculty, was a very interesting man. He was born in the Barbados in 1817 and studied medicine in London, Edinburgh, and Dublin. He came to Canada in 1848 from Barbados, where he had been in practice, and settled in Toronto, where he soon acquired a large connexion. He became Professor of the Institutes of Medicine and Dean of the Medical Faculty in Trinity College and in 1851 he assisted in founding the *Upper Canada Medical Journal*, the first medical journal published in the province. A deeply religious man, some 10 or 12 years after he came to Toronto he wrote several devotional works which attained considerable popularity. The Bishop of Antigua urged upon him the duty of taking orders, so great was his influence for good among all classes. He was accordingly ordained and spent the rest of his life as a missionary in the West Indies. Dr. Bovell died in the Barbados on Jan. 16th, 1880.

FIG. 9.



Dr. James Bovell.

We can get a fair idea of the progress that medical science in its general aspects had made in the capital of Upper Canada by 1850 if we consult Rowsell's Toronto and County York Directory for the year. We find that in 1850, the Medical Board being the directorate, medical studies could be pursued at the Toronto General Hospital, among the trustees of which were Dr. King, Dr. Widmer, and Dr. O'Brien; the Toronto School of Medicine, of which Dr. Rolph was the guiding spirit; Trinity College Medical

[1] Nos. I. and II. were published in THE LANCET of July 28th (p. 268) and August 4th (p. 331), 1906, respectively.

FIG. 10.

Ward in Sick Children's Hospital.

FIG. 11.

The Toronto General Hospital.

School; Toronto Eye Infirmary; Toronto General Dispensary and Lying-in Hospital, established in 1848 (the first of its kind in Toronto); Provincial Lying-in Hospital and Vaccine Institute; Maternity Lying-in Hospital and General Dispensary; and the Catholic Orphan Asylum. There were also a board of health for Upper Canada and a provincial lunatic asylum.

The Toronto General Hospital is described at that time as being 107 feet long by 66 feet wide and two storeys in height, with two other buildings attached thereto for fever patients. The number of patients at that time was said to average 100. Curiously enough, it has not been possible to obtain a picture of the old hospital, but we may be certain it was very different from the imposing building which at present goes under this title (see Fig. 11).

Among the new medical institutions erected since 1850 one of the most deserving of notice is the Hospital for Sick Children. The building used for this purpose is a large one containing 160 beds, and is thus one of the largest hospitals in the world devoted solely to the diseases of children. One block is situated on Toronto Island, in the bay just off the city, and is admirably equipped. The Faculty of Medicine has had for some years the advantage of the splendid opportunities for training in the diseases of children provided by this institution. Resident assistants are appointed annually from the graduates in medicine of the University and hold their position for the year. To Mr. J. Ross Robertson, the author of "Landmarks of Toronto," is chiefly due the existence of this splendid institution. The writer of these articles was taken upon a visit of inspection of this hospital by Mr. Robertson, whose enthusiasm in behalf of the institution was reflected everywhere in the scheme of management and in the domestic details.

There is only one medical college for women in Canada and that is the Ontario Medical College for Women in Toronto, founded in the year 1883. Dr. Michael Barrett, professor of physiology in the University of Toronto at the time, was chiefly responsible for its foundation. The formal opening of the Women's Medical College took place on Oct. 1st, 1883. The number of students who have graduated from the college is 112. There are now 32 students in attendance at the college.

Brief mention has been made in a former article of the old General Hospital and we will now describe the present building which took its place. The old Toronto General Hospital was situated in King-street and continued in use until the erection of the present hospital in Gerrard-street, after which the old building was torn down. The second and present hospital occupies a space of four acres, on the north side of Gerrard-street East. The hospital buildings, constructed in a rectangular shape, are 170 feet long with an average width of 120 feet. The main building is built of white brick with stone dressings and is three storeys high, with a central tower 100 feet in height, with smaller towers at each angle of the front elevation. This main building is used for the accommodation of ordinary medical and surgical cases and contains 17 or 18 public wards and several private wards. The operating theatre is in the centre and is flanked on either side by a wing. It is an up-to-date theatre in every way, properly equipped, lighted, and furnished, as may be seen from the subjoined illustration reproduced from a photograph by Dr. Powell. Connected with the main building by bridges are the fever hospital and the Mercer Eye and Ear Infirmary. In the north-west angle of the grounds is the Burnside Lying-in Hospital, which is supported by voluntary contributions, by the fees of students in attendance, and by a yearly Government grant. This building, as well as the eye and ear infirmary and the fever hospital is of the same style and material as the main structure. Between the lying-in hospital and the main buildings is a structure which serves as a resort during the day for convalescent patients and immediately to the east of this are the mortuary, laundry, and other buildings. The wards are roomy and well ventilated, and Toronto has reason to be satisfied with

FIG. 12.

Toronto General Hospital: The operating theatre.

its General Hospital, even while it is obvious that in the near future provision commensurate to the needs of a growing city will have to be provided.

But it has become more and more evident recently that the very rapid growth of the Medical School of the University of Toronto demands greater hospital facilities than have been hitherto available. During the past few years endeavours to grapple successfully with the difficulty have been made from time to time, and much has been accomplished in this direction. Mr Cawthra Mulock's generous gift of £20,000 to the out-patient department has relieved the pressure on that branch of the hospital, and has been followed by a strenuous attempt to raise a sum sufficiently large properly to reorganise the whole institution in such a way that it would amply meet the needs for clinical teaching of the University Medical School. Negotiations with this object in view are at the present time proceeding between the Government and the University, and it is confidently anticipated that the city of Toronto will render substantial aid in order to further this desirable end. From these sources and from private subscriptions there can be but little doubt that the necessary funds will be readily forthcoming. A scheme is afoot, the details of which will be completed shortly, for the provision of a large, modern, and thoroughly equipped hospital which will place the University Medical School in a position to pursue its teaching under the most favourable auspices.

(To be continued.)

Obituary.

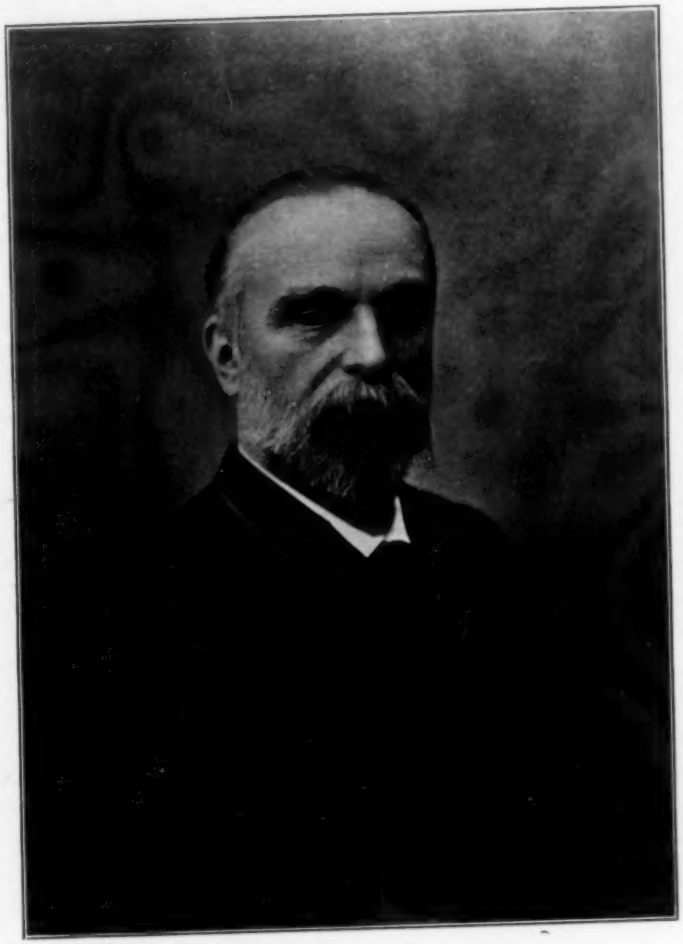
PROFESSOR BROUARDEL.

ONE of the most commanding personalities of French medicine has disappeared owing to the death of Professor Brouardel, whose reputation was spread throughout the world, and whose work and teachings were especially well known in this country which he had visited many times, notably for the British Congress on Tuberculosis held in London in 1901. For 30 years he was among the mouthpieces, and generally he was the chief, of the medical profession of his native country at international congresses, indeed, he represented France officially at almost every congress and meeting held abroad of recent years. His mental activity, which was something extraordinary, found its chief field in questions of legal medicine, hygiene, and medical legislation, on which subjects he wrote many and valuable treatises.

Born at St. Quentin in the department of the Aisne on Jan. 13th, 1837, he studied medicine at the Faculty of Paris, becoming an interne of the hospitals in 1859 and graduating as Doctor of Medicine in 1867. In 1869 he was nominated, at the Concours, physician to the hospitals and a professeur agrégé at the Faculty of Paris. His first wish was to devote himself to pure medicine, for he had been the pupil of Lorain. In this section of medical science he published papers upon Tuberculosis of the Genital Organs of Women (1865); upon Lesions of the Temporal Bone (1866); upon the Conditions of Infection and Propagation of Small-pox (1870); upon the Analysis of the Gases of the Blood (1870); upon the White Corpuscles in the Blood of Small-pox Patients, of the Wounded, and of Women during the Puerperium (1874); upon Vaccination and Small-pox (1869, 1870, and 1874); upon Rabies in Man (1874); upon Glanders and Farcy in Man (1876); and upon Variations in the Quantity of Urea excreted in Maladies of the Liver (1876). In 1877 he published the great work of his master, Lorain, which he had concluded with his own hand, the subject being the Temperature of the Human Body and its Variations in Different Diseases. Soon, however, the study of legal medicine engaged his attention completely. As assistant to Professor Tardieu, who was then the titular head of this department at the Faculty of Paris, he was struck by the insufficiency of the means which then existed for instructing students in this subject, and after the example of Professor Tourdes of Nancy, who made his pupils assist him at post-mortem examinations, he organised at the Paris Morgue classes with practical demonstrations for the students. These classes he continued throughout his life, although the place is damp, very insanitary, and unable to be enlarged because of its site upon a small island in the Seine, while it cannot be transferred anywhere else, for the inhabitants of every quarter of Paris have objected to having a new Morgue in the quarter where they dwell. It is probable that the gradual breakdown in his health took place owing to the insanitary surroundings of the Morgue.

In 1879 Professor Brouardel succeeded Tardieu as professor of the chair of legal medicine and in the same year he was nominated expert in legal medicine to the courts. On him devolved the duty of drawing up all the medical reports for all important trials during the last 30 years, and it will be remembered that he came to Bournemouth in company with Professor Charcot to inquire on behalf of the French Government into the state of health of the well-known Cornelius Herz. The medico-legal reports which he wrote, and of which he published a large number, are models of their class owing to the lucidity of their style, the clearness of their diction, their logic, and the ingenuity of their conclusions. They were published in a special review which he edited under the name of "Annales d'Hygiène Publique et de Médecine Légale." Sundry other publications on the same kind of subject were the following: Studies of Medico-legal Post-mortem Examinations at the Morgue (1878); a Medico-legal Study upon the Combustion of the Human Body (1878); on Rape during Hypnotic Sleep (1879); on Poisoning by Chlorate of Potash (1881); on Causes of Error in Expert Opinions upon Attempts upon Chastity (1884); on Traumatic Diabetes from the Point of View of Medico-legal Expert Evidence (1888); a Medical Study upon the Death of Baron Reinach (1893); and many others of which the enumeration would take up too much space. Besides these he published many volumes upon legal medicine such as the Toxicological Laboratory (1891); the Seal of Medical Confession (Secret Médical) (1893); Death and Sudden Death (1895); Asphyxia by Gases and Vapours (1896); Hanging, Strangulation, and Drowning (1897); Explosions and Explosives from a Medico-Legal Point of View (1897); Infanticide (1897); and Medical Responsibility (1898). All these works, however, which would have reflected credit on any man were only a small part of his labours. In 1886 he was chosen Dean of the Faculty of Medicine of the University of Paris, a post which he filled for 14 years, and during the tenure of which he contributed in a great measure to the reorganisation of medical studies. He was a member of the Council of the University and of the Superior Council of Public Instruction; he was strongly in favour of the creation of an Institute of Colonial Medicine for Paris and of special diplomas for forensic medicine and sanitary medicine. He reorganised the studies in odontology and brought about the creation of examinations for the granting of a diploma of dentistry at the Faculty of Medicine of Paris.

During the latter years of his life, however, the subjects of hygiene and of public health absorbed all his attention. Never an epidemic occurred in France but he was given the duty of investigating it, and his reports upon the following epidemics excited widespread interest: on the Epidemics of Cholera at Marseilles and Toulon (1884); on Sanitation in the Town of Toulon (1885); on the Appearance of an Epidemic of Cholera at Marseilles (1885); on the Epidemic of Miliary Fever (*Sueette Miliaire*, Picardy Sweat) in Poitou (1887); and the Origin of Epidemics of Typhoid Fever (1887). Becoming a member of the Consultative Committee of Public Health in 1879 he was president from 1884 to 1903, and upon him devolved the duty of representing France at all the International Conferences of Hygiene at Dresden, Venice, Rome, and Paris. To him as much as to anyone is due the generally recognised view that typhoid fever is mainly a water-borne disease. It was he who drew up the text of the International Regulations for Maritime Sanitation, and it was he also who drafted the Public Health Act of 1902, which is the authority in France for all matters of public health. Brouardel took a great interest in the struggle against tuberculosis and represented France at the congresses on the subject held at Berlin and London, while to him was due the organisation of a scheme for fighting tuberculosis in France by the multiplication of sanatoriums and dispensaries. In this branch of his work he met with great difficulties, for the plan involved enormous expense, and the lengthy periods during which the scheme was in abeyance made it possible to see the results of a similar plan which had been carried through in Germany. From German experience it was evident that the good results



PROFESSOR BROUARDEL.

obtained by sanatoriums were by no means commensurate with the expenses which their construction and upkeep involved and it is possible that France was here no great loser by the checks to Brouardel's energy.

Another portion of Brouardel's life work was devoted to the interests of the medical profession. Thus he was president of the Syndicate of Medical Men of the Seine, of the Union of Medical Syndicates of France, and of the General Association of Medical Men in France, while there were few scientific or professional societies over which he did not at one time or another preside. He was in a way the Pontifex Maximus of French medicine, always considered as the chief by his colleagues and always consulted by the Government as to any question involving medical matters or medical men. No one else in the medical profession played so important a social rôle.

He was a man of prodigious activity and an untiring worker, paying personal attention to the innumerable letters which he was constantly receiving upon all sorts of subjects. Those who came to consult him always retired from the interview satisfied and full of hope, and, a thorough diplomatist, he occupied a very delicate post for many years, although naturally enough he did not succeed in pleasing everyone. Now, at the age of 69 years, he is dead. He died from tuberculous laryngitis which ran a rapid course, and in the treatment of which he displayed but little of the prudence which he would have urged so emphatically upon others. For he had suffered for many years from diabetes and must have known his risks, yet he was continually smoking cigars and refused to abate any of his multifarious activities unless he was absolutely obliged to do so. He was loaded with honours, had been a Member of the Academy of Medicine since 1880, was a Grand Officer of the Legion of Honour, and the recipient of innumerable foreign decorations. He married late in life and had no children, but up to the beginning of this year his aged mother was still alive and happy in the devotion and attention shown her by her son.

EDWARD FRANCIS WILLOUGHBY, M.D. LOND., D.P.H. CANTAB. & LOND., M.R.C.S. ENG.

BY the death of Dr. Edward Francis Willoughby on July 29th, after a brief illness, the medical profession has lost a member who was widely respected for his erudition and esteemed for his personal character. Dr. Willoughby was a native of Warwickshire and a student at University College, London. He became qualified as a Member of the Royal College of Surgeons of England in 1865. In 1869 he graduated as M.B. of London with honours. Soon afterwards he established himself in medical practice in the north of London and continued in the exercise of his profession till his death. In 1881 he added the D.P.H. of Cambridge and of London to his qualifications and became M.D. in 1889. Until almost the day of his death his intellectual activities were many and varied. While keeping himself abreast of the latest advances of medicine he had for many years devoted an increasing measure of attention to questions of public health. He was the author of a "Health Officers' Pocket-book," "Hygiene for Students," and a manual for the farm and laboratory on "Milk." Numerous papers on hygiene or allied subjects flowed from his pen, which was almost never idle during intervals of leisure from professional duty. These appeared from time to time in the "Encyclopædia Medica," von Ziemssen's "System of General Therapeutics," the Transactions of the Epidemiological Society, and our columns. Sometimes he dipped into general literature, as when he edited the Prologue to the "Canterbury Tales." Besides being a member of the British Medical Association he was also on the roll of the Epidemiological Society, the Society of Medical Officers of Health, and the Royal Sanitary Institute, and was honorary medical officer to the Mansion House Council on the Dwellings of the Poor. A good man, an enthusiast in his profession, a scholar, and a gentleman, he will be long remembered by those who have enjoyed the privilege of knowing him.

OSCAR THOMAS WOODS, M.D. T.C.D., L.R.C.S. IREL.

Dr. Oscar T. Woods, medical superintendent of the Cork District Asylum, died on Thursday night, August 2nd, after a protracted illness. The announcement caused sincere regret not alone amongst his medical brethren but also amongst the citizens generally. Dr. Woods was born at Birr, King's County, and was 58 years old at the time of his death. He studied at Trinity College and graduated at the University of Dublin. Soon afterwards he went to England and was appointed medical officer of the Warwickshire Asylum. After holding that position for some time he returned to Ireland and was appointed medical superintendent of the Kerry District Asylum at Killarney. He held that post for 11 years and was then appointed medical superintendent of the Cork District Asylum. During his tenure of office in Cork he effected many improvements in the asylum and was ever most energetic in his efforts to ameliorate the sad lot of the afflicted inmates of the institution. A strict disciplinarian, he was always kind and considerate to all with whom his official duties brought him in contact. Though Dr. Woods's position was a remunerative one it entailed many cares and anxieties. During his 17 years' tenure of office the increase in the number of patients became so great that the accommodation ceased to be at all adequate. Pulmonary tuberculosis became prevalent and Dr. Woods pointed out to his board the dangers likely to occur unless the congestion were relieved. As the result of his representations an auxiliary asylum was recently built at Youghal and some of the comparatively chronic inmates were removed there. A serious outbreak of enteric fever in the Cork Asylum some 12 months ago taxed Dr. Woods's resources to the utmost, and he exhibited much care and discrimination in his endeavours to trace the cause. He always displayed the greatest tact and judgment in the management of the asylum and it was generally recognised that he was a most efficient officer. Alienists recognised his great ability and attainments and in the year 1901 he was elected president of the Medico-Psychological Association of Great Britain and Ireland. During that year the members assembled in congress at Cork and were most hospitably entertained by their president.

WILLIAM JAMES MARTIN, M.D. ST. AND., F.R.C.P. EDIN.

Dr. W. J. Martin, who had been well known in Dublin for the last 50 years, died on August 4th at his residence, 17, Harcourt-street. He was physician to Jervis Street Hospital for a long period, visiting surgeon to the Richmond District Lunatic Asylum, secretary to the Board of Superintendence of the Dublin hospitals, and medical referee to the Sun and other assurance companies. Dr. Martin was very popular and much esteemed by the members of his profession as also by a large circle of friends, to whom the news of his death came as a grievous shock, though he was known to be in delicate health for some time. He was son of the late James Martin of Cappagh, co. Dublin, and brother of the late Sir Richard Martin, Bart.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Albert Voss, director of the Prehistoric Section of the Royal Berlin Museum. He originally practised medicine but early in life his great interest in anthropology and prehistoric science led him to give up the practice of his profession.—Dr. Adolf Witzel, professor of odontology in Jena, aged 58 years.—Dr. Georg Wilhelm August Meyer, formerly director of the Osnabrück Insane Asylum, described in the Germany medical press as the Nestor of German alienist physicians.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Indian Medical Service: Reorganisation Scheme.

THE following alterations of the rules for the allotment of officers by the Indian Medical Service to commands have been published. Prior to 1896 officers were appointed to one or another of the three presidential cadres but since that date officers have been allotted to a military area and have been liable to serve anywhere, though ordinarily employed in the area originally selected by them. This system has resulted in numerous difficulties in arranging transfers, leave, provision of substitutes, and so on. The scheme now is to amalgamate the presidential and general lists and officers will not retain any lien on the areas of their choice except of employment in a civil capacity. Fresh

officers will be liable to be sent anywhere for civil employment but will be allowed, according to the requirements of the service, a choice of certain areas. All this means that fresh powers have been given to the heads of the service as against the wishes of the individual officer and that fixity of tenure has been abolished. Fresh officers will be posted to the areas of those military commands in which these officers have expressed a desire to serve. It is difficult to see where the individual officer benefits but it may simplify work at headquarters. The danger is that this new ordinance may lead to undesirable favouritism and patronage.

Some Indian Statistics.

The incorrectness of Indian vital statistics is well illustrated by certain registration returns of two towns in Assam. The birth-rate of this province varied in 1905 from 69·16 at Barpeta to 1·7 at Jhalakati and the death-rate for these two towns was 55·21 and 4·77 respectively. Barpeta is a sacred town to which Hindu women resort. The returns from the other place are unexplained.

Kala-azar in Assam.

The fatal disease of kala-azar seems to be decreasing in Assam, as last year only 3030 deaths were reported, two-thirds of which occurred in the Sylhet and Danang districts.

The Plague Epidemic.

The mortality from plague has now sunk to a few hundreds weekly. Burma heads the list for the week ending July 7th with 243 deaths, the Punjab comes next with 155, the Bombay Province returned 149, Bengal 25, Mysore 19, United Provinces six, and Madras five. The latest destroyer of the rat flea is notified to be crude petroleum. This substance seems effective against the flea but has no power over the plague bacillus. One advantage it possesses is in its cheapness. It is of more importance, however, to kill the rat than the parasitic flea. In the Punjab the people have come to recognise the dangers attached to the rat and are killing these pests freely and of their own accord. In Bombay poison has been largely employed and about 200,000 rats are said to have been destroyed in the year. For this result over 1,000,000 baits were laid down. It is stated that a female rat will produce about 50 young each year, but upon this point more evidence is wanted. The periodicity of plague outbreaks has not yet been explained and it is not yet known whether this character is dependent upon conditions affecting the bacillus, the flea, or the rat.

The Spread of Cocaine Eating in India.

The habit of taking cocaine, which has produced such disastrous results in certain towns of India, is unfortunately spreading widely. Recently in the neighbourhood of Delhi and in certain native States the habit has been contracted, and the Punjab Government, following the example of the United Provinces and Burma, proposes local legislation to amend the Excise Act so as to get fuller powers of dealing effectively with the sale of this drug.

July 21st.

Medical News.

UNIVERSITY OF EDINBURGH.—The following is the official list of passes at the recent professional examinations for degrees in medicine and surgery:—

First Professional Examination.—T. A. Adams, Peter Allan, Alexander Archibald, O. H. Blackiay, Robina Blackwood, H. R. Borcherds, G. S. Brock, W. D. Brownrigg, Gilbert Burnet, J. le F. C. Burrow, Andrew Campbell, A. D. Campbell, T. F. Craig, W. A. Dunn, T. R. Evans, A. J. Ewing, M.A., A. G. Forbes, T. E. Forrest, A. S. Glynn, Christopher Gordon, G. M. Graham, A. L. Grant, Max Greenberg, J. D. Gunn, B.A., T. E. Harwood, B.A. (with distinction), John Hepburn, W. R. C. Heslop, D. van V. Hoffman, A. J. G. Hunter, C. C. Iles G. L. W. Iredale, W. D. Kirkwood, J. St. P. Knight, James Lamberton, J. P. Litt, J. M. Logie, F. R. Lucas, W. C. Lyons, D. J. M'Afee, W. V. Macaskie, H. J. M'Caw, A. E. P. M'Connell, Marion I. A. Macintyre, A. R. Mackenzie, J. M. Mackinnon, P. W. Maclagan, K. A. Maclean, Lorna D. M'Lean, William M'Naughton, N. F. Mann, A. M. Masters, S. N. Mokand, D. C. Monro, B. B. Morgan, A. A. Morison, D. M Morison, T. C. Murphy, J. M. Murray, W. P. Murray, P. J. Olivier, H. G. Parker, C. R. Patton, J. F. Penman, Stanley Pinion, A. N. Pollock, A. W. Rattrie, H. C. Robins, Christopher Rogers, T. R. Sandeman, W. A. Shafto, Samuel Sloan, A. N. Smith, K. P. Sonntag, N. W. Stevens, John Stevenson, George Sutherland, R. J. Tait, H. C. Todd, J. A. Tomb, R. R. Watts, W. L. Webster, H. J. G. Wells, R. A. C. Wilkes, S. H. Wilkinson, H. T. Williams, and N. C. Young.

Second Professional Examination.—A. H. T. Andrew, B. S. Browne, J. A. Browne, J. E. Brydon, Henry Burns, H. G. Carter, Jean G. Catheis, J. J. P. Charles, D. D. Craig, Fred. Dillon, W. J. Duncan, Helen Forbes, Kenneth Fraser, W. T. Gardiner, P. J. Garvey, Alexander Gibson, M.A. (with distinction), H. R. B. Gibson, A. T. Gowan, W. B. Grant, F. W. Greaves, J. A. W. Hackett, R. W. Hauman, Herbert Hutson, H. E. Johnson, James Langwill, J. M. Lawl, A. J. Bruce Leckie, A. R. Leggate, Edward Lewis, V. D. O. Logan, J. C. Lorraine, J. V. MacDonald, G. M. Mackay, Ian C. Mackenzie, D. L. MacKenna, A. K. Maclachlan, Peter Meredith, J. B. de W. Molony, Anna L. Muncaster, N. S. Neill, C. T. Newton, J. H. Peck, Alfred R. Price, S. A. Rahman, Myfanwy D. Rees, E. M. Reid, F. E. Reynolds, M. B. Smith, H. M. Spoor, J. W. Stirling, D. H. Stodart, E. A. Strachan, D. R. P. Walther, John Ware, W. S. Watson, Gordon Wilson, and G. G. Wray.

Second Professional Examination (Old Regulations).—S. Rowland.

Third Professional Examination.—G. J. Adams, C. F. Bainbridge, J. P. Berry, Mary F. Bignold, H. W. Binks, F. V. Nanka Bruce, E. A. Brummitt, R. A. Campbell, Theodore Craig, F. W. M. Cunningham, C. H. Derksen, Thomas Derrick, C. A. A. Dighton, V. Lloyd Evans, S. B. Faulkner, T. Y. Finlay, Stephen Forrest, M.A., David Geddes, G. R. Gray, J. G. Greenfield (with distinction), J. A. Harley, F. G. Harper, A. M. Hewat, J. M'A. Hill, W. P. Holden, M. J. Johnston, W. L. Johnston, Catherine Kirk, M.A., R. H. S. Laugeveldt, A. F. Lee, G. H. Lowe, John Macdiarmid, L. R. H. P. Marshall, C. J. van der Merwe, Barbara Richardson, W. G. Riley, A. H. M. Robertson, W. A. Robertson, R. L. Scott, Thomas Smyth, L. D. Stephen, Alice M. Thompson, H. B. Thomson, A. L. Thornley, Lydia K. Towers, A. B. Turnbull, V. A. Vijayakar, R. N. Wallace, W. H. te Water, W. C. Whiteside, and J. L. Masterman Wood.

FOREIGN UNIVERSITY INTELLIGENCE.—*Basle:* Dr. Gelpke has been recognised as *privat-docent* of Surgery; Dr. A. Labhardt as *privat-docent* of Midwifery and Gynæcology; and Dr. E. Oppikofer as *privat-docent* of Oto-Rhino-Laryngology.—*Bordeaux:* Dr. Denucé, *agrégé*, has been appointed Professor of the Surgical Diseases of Children in succession to the late M. Piéchaud.—*Christiania:* Dr. Kristian K. H. Brandt has been appointed to the chair of Medicine.—*Copenhagen:* Dr. S. Monrad has been appointed Lecturer in Children's Diseases. Dr. Erlandsen has been recognised as *privat-docent* of Internal Medicine.—*Göttingen:* Dr. His of Basle has accepted the invitation to succeed Professor Ebstein. Dr. Th. Lochte of Hamburg has been offered the chair of Forensic Medicine in succession to the late Dr. Stolper.—*Halle:* Dr. Friedrich Fromme has been recognised as *privat docent* of Midwifery and Gynæcology.—*Heidelberg:* Dr. Richard Werner has been recognised as *privat-docent* of Surgery. Dr. Völker has been granted the title of Extraordinary Professor.—*Kiel:* Dr. Ernst Ziemke of Halle has been appointed Extraordinary Professor of Forensic Medicine.—*Königsberg:* Dr. P. Stenger, *privat-docent* of Otology, has been granted the title of Professor.—*Leipsic:* Dr. Heinrich Klien has been recognised as *privat-docent* of Neurology and Psychiatry.—*Marburg:* Dr. Arthur Heffter of Berne has been appointed to the chair of Pharmacology.—*Montpellier:* Dr. Gervais de Rouville, *agrégé*, has been appointed Assistant Professor.—*Munich:* Dr. Ernst Heilner has been recognised as *privat-docent* of Physiology.—*Nancy:* Dr. Guilloz, *agrégé*, has been appointed Assistant Professor.—*Naples:* Dr. Giuseppe Evoli and Dr. Pasquale Pezzullo have been recognised as *privat-docenten* of Internal Pathology.—*Paris:* Dr. Albarran, *agrégé*, has been appointed Professor of the Diseases of the Urinary Passages in succession to M. Guyon. Dr. Thoinot, *agrégé*, has been appointed Professor of Forensic Medicine in succession to the late M. Brouardel.—*Prague (Bohemian University):* Dr. Haskovec, *privat-docent* of Neuropathology, Dr. Weigner, *privat docent* of Anatomy, and Dr. Srdinko, *privat docent* of Histology and Embryology, have been promoted to Extraordinary Professorships. (*German University*): The selections for the chair of Pathological Anatomy are—(1) Dr. Kretz of Vienna and Dr. Kaufmann of Basle (equal); (2) Dr. Dürck of Munich; and (3) Dr. Heinrich Albrecht, Dr. Anton Ghon, and Dr. Friedrich Schlangenhaufer, all of Vienna.—*Rome:* Dr. Salvatore Ottolenghi, Extraordinary Professor of Forensic Medicine, has been promoted to be Ordinary Professor.—*Rostock:* Dr. Otto Büttner, *privat-docent* of Midwifery and Gynæcology, has been granted the title of Professor.—*Strasburg:* Dr. Oscar Römer, *privat-docent* of Odontology, has been promoted to an Extraordinary Professorship. Dr. Wollenberg of Tübingen has accepted the invitation to the chair of Psychiatry. Dr. Ulrich, Extraordinary Professor of Ophthalmology, is retiring.—*Toulouse:* Dr. Cestan, *agrégé*, has been appointed Professor of Clinical Surgery.—*Turin:* Dr. Camillo Magnani has been recognised as *privat-docent* of Ophthalmology.—*Vienna:* Professor Benedikt, Professor Politzer, Professor von Stoffella, and Professor Winternitz are all retiring.—*Würzburg:* Dr. Martin Reichhardt has been recognised as *privat-docent* of Psychiatry.

VACATION SCHOOL AT PASSMORE EDWARDS SETTLEMENT.—This school, only open during the month of August, is now in the fifth year of its existence and has already found successful imitators at Stratford, Walworth, Camberwell, and Hoxton, whilst similar schools are being opened in Leeds, Hull, Sheffield, and Liverpool. The scheme, originally copied from the United States, is likely to spread, for one of the only clauses of the present Education Act which proved to be non-controversial gives permission to local authorities to open vacation schools and provide some financial support. In the case of this pioneer enterprise application forms are sent to 12 schools in the neighbourhood of the Settlement, which has a permanent building in Tavistock-place, and it is laid down very clearly that the object of the school is for those children who are unable to go into the country during the holiday month of the schools. Four years ago the number of children on the first day was 380; this year the number has risen to 950. The cost works out at 1s. 6d. per child per week, the chief expense being £226 for salaries for the director, 24 teachers, and two accompanyists. The discipline is excellent and the arrangements are cleverly perfected by making the children assemble every 35 or 70 minutes at the end of a lesson in a central courtyard, where each child knows his or her place and marches off with a fresh teacher to a change of play-work. The classes do not exceed about 30 boys or girls and there are morning and afternoon sessions for different children. Those who may have forgotten our previous notes on this subject should be reminded that these vacation schools are chiefly intended to teach children how to play, how to occupy themselves, and to provide some recreation other than that usually enjoyed in the London streets. But great care is necessary to prevent the demon of "nervous strain" being introduced and therefore all subjects of the usual school curriculum are strictly banished. The present course consists of carpentering, cardboard modelling, basket work, musical drill, organised games such as basket ball, gymnastics, dancing, singing, clay modelling, drawing, brushwork, doll dressing, knitting, story-telling, nature study, and housewifery, which includes the laying of a table, making beds, and washing a baby. Both boys and girls seem to love the cookery lessons, which include various methods of using up stale bread and cold meat, boiling vegetables, preparing lemonade, jam puffs, sausage rolls, rock cakes, scones, and plum dumplings, besides chopping suet, cleaning utensils and knives. Then there is the preparation for washing-day, washing and boiling white clothes, and ironing and folding aprons and kitchen cloths. For the smallest children there are ordinary kindergarten games, bubble blowing and sand digging, and, thanks to the Duke of Bedford many of these classes are held in the garden adjoining the Settlement. This year two new classes have been opened, one in which a shoemaker teaches boys how to cobble their shoes and the other in an open air gymnasium provided by the liberality of the Duke. We visited the class-rooms at the end of a hot day and were pleased to find the windows open and a complete absence of human odour. Among side shows visits are paid to the Zoological Gardens and sketches are there made of the animals from life; both sexes visit the swimming baths and the elder boys get instruction in cricket in the playground of one of the neighbouring council schools. It is obvious that much physical benefit is derived from this month's occupation and anyone who has witnessed the delighted keenness of the children and the enthusiasm of the teachers can hardly doubt the success of the endeavour. Mrs. Humphry Ward has so far been fortunate in securing the instructors who have more than one month's holiday in the year and can therefore afford time, as one of them expressed it, to renewed study of the life of children.

DONATIONS AND BEQUESTS.—The late Mr. Charles Thornton, barrister, has bequeathed £1000 to the London Hospital, £1000 to the Victoria Hospital for Children, Chelsea, and £500 to the After-care Association.

PRESENTATION TO A NURSE.—Lord Methuen, as chairman of the committee of management of King's College Hospital, recently accompanied a small deputation upon a visit to Miss K. H. Monk at Brighton, for the purpose of presenting her with a testimonial on her retirement from the post of sister-matron, after 23 years of service to the hospital. The testimonial consisted of a purse of money subscribed for by over 500 friends and past and present members of the committee and medical and nursing staffs of King's College Hospital.

LITERARY INTELLIGENCE.—As the result of investigations extending over a period of many years, with the aid of expert assistance, Sir Almroth E. Wright has written a book which Messrs. Archibald Constable will shortly publish, and which should have a marked effect on the results obtainable by all students using the microscope. The object of the book is to show how best to get from any class of instrument the highest degree of satisfaction in proportion to its range. The text of the book goes hand-in-hand with experiments and the work also contains a complete vocabulary of technical terms relating to the microscope.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, AUGUST 1ST.

The Home Office and Anthrax.

IN the debate on the report stage of the Home Office vote some references were made to the numerous deaths from anthrax. Mr. GLADSTONE stated that the number of deaths in 1900 was 37; in 1901, 39, and in 1902, 38. There was a jump up in 1903 to 47, in 1904 to 50, and in 1905 to 59. This progressive rise was receiving the grave consideration of the Home Office. It had been suggested as a remedy that the imported wool which harboured the germs of the disease should be dealt with at the port of landing; but the wool was imported in large quantities, made up in bales, and to have it unpacked on landing would mean the placing of a very heavy tax on the trade. In the meantime, however, a special committee of investigation had been appointed in Bradford, with a Government subsidy, and he was informed that there were real hopes by means of a chemical process of a remedy being found. If, however, wool containing these spores in dangerous quantity did not yield to treatment the only remedy would be to exclude the wool altogether.

The Lunacy Commission.

Another subject raised on the same report was the position of the Lunacy Commission. Mr. G. J. COOPER urged that the number of Commissioners should be increased. The Board as at present constituted was unable properly to discharge its duties. There were six Commissioners, three barristers and three medical men. On the work of inspecting lunatic asylums they went in pairs, a legal member always accompanying a medical member. But if all the lunatics in the asylums were examined each pair of Commissioners would have to examine 39,943 in the year. It was physically impossible that they could do so and determine whether anyone was wrongly detained in an asylum. He further complained of the growing tendency to send aged people into asylums. In 1903-04 1445 people over 70 years of age were sent into asylums as lunatics who were merely suffering from senile degeneration. The whole of the people ought to have been kept in the workhouse. He had heard it stated that if the rich were treated as these poor people were one-third of the members of the House of Lords would die in a lunatic asylum. The knowledge of the essential nature of insanity and its causes was not much better to-day than it was a hundred years ago and until a more scientific investigation into the cause of brain disease was made there would be no better means of cure forthcoming. It would be well if the Home Secretary were to make inquiries as to the working of the receiving-house system which had been adopted by lunacy authorities in Scotland and in America.—MR. GLADSTONE, in reply, pointed out that in regard to lunatic asylums he had a mere shred of responsibility. He passed the plans and sanctioned the estimates; the county councils built the asylums; the Local Government Board sanctioned the loans; and the Lord Chancellor appointed the Commissioners in Lunacy. An inquiry into the whole system of inspection, which was antiquated and absurd, was desirable. It should be borne in mind, however, that the Commission on the Feeble-minded was about to report, and that this report would deal with lunatic asylums, and when it was received the Government would consider whether any, and if so what, action was desirable.

Provision of Food for School Children.

DR. MACNAMARA asked the President of the Local Government Board whether he could now give any information as to the working of the Local Government Board Order of May, 1905, respecting the coöperation of boards of guardians in the work of providing food for children in attendance at public elementary schools suffering from lack of food.—MR. JOHN BURNS answered: The Local Government Board obtained from its inspectors some information on this subject in March last, from which it appeared that in some populous districts, such as the large Lancashire and Yorkshire unions, a good deal of work has been done under the Order, but that elsewhere the cases relieved under the Order had not been very numerous. In the eastern counties no relief under the Order had been found necessary except at Norwich. In Birmingham, shortly after the Order came into force, the guardians were informed by the local education committee that there were 2800 underfed children in the parish and that they were being supplied with free meals. Numerous applications were made by the head teachers to the relieving officers on behalf of children under their care, but when inquiries were made as to the circumstances of the parents of these children it was found that in many cases the guardians would not be justified in granting relief under the Order. The largest number of children on any one day to whom meals have been supplied by the guardians under the Order was 482. At Bristol the guardians made arrangements with the local education authority to obtain the assistance of a local society interested in the welfare of children. The first list sent in by the teachers specified 74 children as being underfed by reason of parental neglect, but inquiry by the relieving officers

showed that only in one case would the guardians be justified in giving relief. Up to the end of January the names of 55 children were submitted as coming within the Order but in only 11 cases was relief given. Thus out of 129 applications only in 12 instances did the guardians feel justified in giving relief. In Cheshire, Salop, &c., 27 cases were relieved—viz., two at Birkenhead, three at Bucklow, eight at Congleton, four at Stoke-on-Trent, and ten at Wolstanton and Burslem. In several unions, however, voluntary funds were started and thus children were relieved and kept off the rates. At Derby there were 127 applications and 17 children were found to be underfed. In Nottingham there were 107 applications and 51 relieved. In Leicester there were over 400 applications but in no case was relief found to be necessary. In the township of Manchester 120 cases were relieved, about 380 in Chorlton, and many in Prestwich. The operation of the Order in Lancashire was mainly restricted to the neighbourhood of Manchester and Bolton. As regards the East and West Ridings of Yorkshire, there were 2586 cases in Bradford, 375 parents of 1073 children were notified that relief was given on loan, and 50 parents were proceeded against for recovery of the cost. Of the 2586 cases 1513 were fed by the guardians on behalf of the education authority which administered a fund raised by the mayor. In Leeds 500 cases were fed at the cost of a voluntary fund. 110 cases were fed at first in Hunslet but the number was afterwards reduced to 30. In Bramley the guardians fed 291 and a voluntary fund 2523 cases. In London, generally speaking, very few cases were relieved under the Order, but in some ordinary poor relief was granted and in others food was provided by school children's meals associations from moneys voluntarily contributed.

Tuberculosis in Ireland.

Mr. FETHERSTONHAUGH asked the Chief Secretary to the Lord Lieutenant of Ireland whether the Irish Government had directed its attention to the circumstance that the increase of tuberculosis in Ireland had followed on the increased use of low-class American bacon, believed by many people to be the flesh of tuberculous swine; and whether as there was no Government inspection of possibly tuberculous meat at the ports of entry he would consider the advisability of issuing a circular to the various public health authorities in Ireland, calling their attention to the danger to health arising from the consumption of meat infected with the bacilli of tuberculosis and the necessity for vigilance of their inspectors in preventing unsound meat from being exposed for sale.—Mr. BRYCE replied: The entire question of the importation of food, which affects the United Kingdom generally, has been under the consideration of the Government, and my right honourable friend the President of the Local Government Board has introduced a Bill dealing with the matter. I refer to the Public Health (Regulations as to Food) Bill, which is down for second reading on Oct. 23rd.

Report of the Royal Commission on Tuberculosis.

Mr. FIELD asked the President of the Local Government Board whether he could state when the report of the Royal Commission on Tuberculosis would be issued; and whether it was intended to make a definite statement regarding the communicability of bovine tuberculosis to man.—Mr. JOHN BURNS answered: The Royal Commission hoped that the report which it proposes to issue would have been published before the adjournment, but it now finds that it will not be practicable to issue it before October. It thinks that it is necessary to include in the appendix a larger amount of experimental detail than it anticipated and to confirm certain important facts by additional experiments which are still under observation. I understand that a definite statement on the communicability of bovine tuberculosis to man will be made in the report.

Poor-law in Ireland and the Medical Profession.

Mr. O'SHEE asked the Prime Minister what were the reasons why he declined to recommend the appointment of an Irish medical man on the Royal Commission on the Poor-law to fill the vacancy created by the death of The O'Conor Don, and whether, as the Irish medical profession was vitally concerned in the investigations of the Royal Commission so far as regards Ireland, he would reconsider the matter.—Sir HENRY CAMPBELL-BANNERMAN answered: I do not see my way to reconsider this matter in the sense desired by the honourable Member. The selection of members of Royal Commissions is governed by general considerations and in any fresh appointment that may be made to the Royal Commission on the Poor law the honourable Member may be sure that regard will be had to the Commissioner's qualifications for dealing with the Poor-law as it is administered in Ireland. It does not follow that because Irish Poor-law medical officers are interested in the inquiry the appointment of an Irish medical gentleman would necessarily be the most fitting to make.

THURSDAY, AUGUST 2ND.

Poor-law in Ireland and the Medical Profession.

Captain CRAIG asked the Chief Secretary to the Lord Lieutenant of Ireland whether, in view of the great importance of the subject to the whole of Ireland, he would see his way to reconsider his decision regarding the constitution of the Irish Poor law Commission and appoint to it an independent member of the medical profession who was thoroughly conversant with the whole principles, honour, and interests of the Poor-law medical profession in Ireland.—Mr. BRYCE replied: The honourable Member is under a misapprehension. No vacancy exists in the Irish Poor-law Commission, which has now practically completed its labours. The vacancy which the honourable gentleman has in mind is in the Royal Commission on the Poor-law for the United Kingdom, and, as to that, I would refer him to the reply given by the Prime Minister yesterday to the question of the honourable Member for West Waterford.

FRIDAY, AUGUST 3RD.

Sleeping Sickness.

Mr. CATHCART WASON asked the Under Secretary of State for the Colonies whether, in view of the fact of the sale of Government House at Entebbe, the ravages of sleeping sickness, the insufficiency of the water-supply, fever, and the general unsuitability of the district adjoining the lake, he would before expending public money in the erection of a new Government House consider the advisability of removing the seat of Government, temporarily at any rate, to the Kampala district where the tsetse fly and sleeping sickness are unknown; and whether he would, in view of the importance of the East Africa and Uganda Protectorates, endeavour to pay, himself, a visit to the country.—Mr. CHURCHILL answered: With regard to the first part of the honourable Member's question I would refer him to the reply which I gave to his question of July 19th. The Secretary of State is communicating with the Deputy Commissioner of Uganda and Dr. Moffat on the question of the desirability of removing the seat of Government in Uganda to Kampala and when their replies have been received the whole matter will be carefully considered in consultation with the Commissioner. With regard to the second part of the honourable Member's question I should particularly desire to pay a visit to the East Africa and Uganda Protectorates if the Secretary of State were to consider that I could be spared from my duties in the House of Commons. But in view of the occurrence of an autumn session I fear my wish is hardly likely to be realised this year.

SATURDAY, AUGUST 4TH.

The Government and Vaccination.

Answering a question raised in the general debate on the motion for the holidays Mr. GLADSTONE admitted that the law in regard to vaccination exemption certificates was not in a satisfactory condition. He should be glad to see it altered. The whole question of the administration of the Act of 1898 was under the consideration of the President of the Local Government Board.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BOTHAM, R. H., M.R.C.S., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Staindrop District of the county of Durham.

CRISP, JAMES ELLIS, M.R.C.S., L.S.A., has been re-appointed Medical Officer for the Lacock district by the Chippenham (Wiltshire) Board of Guardians.

HILL, WALTER JAMES, L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health of Clevedon (Somerset).

HUGHES, PERCY T., M.B., C.M. Edin., D.P.H., has been appointed Medical Superintendent to the Worcester County Asylum, Barnsley Hall, Bromsgrove.

MACLEAN, ALICE W., M.B., Ch.B. Glasg., has been appointed House Surgeon at the Chorlton-upon-Medlock Dispensary, Manchester.

PHILLIPS, H. J., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Medical Officer to the London Open-air Sanatorium, Pinewood, Wokingham, Berks.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Third House Surgeon, unmarried. Salary £50 per annum, with board and residence.

BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.

BUXTON, DEVONSHIRE HOSPITAL.—Assistant House Surgeon. Salary £70 per annum, with apartments, board, and laundry.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road.—Registrar (Honorary).

CHELTENHAM GENERAL HOSPITAL.—Junior House Surgeon, unmarried. Salary £60 per annum, with board and lodging.

CHESHIRE, CROSSLEY SANATORIUM, Delamere Forest.—Assistant Medical Officer. Salary £50 per annum, with board, apartments, and laundry.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL AND DISPENSARY.—Senior House Surgeon. Salary £120 per year, with board, apartments, and laundress.

COTFORD, TAUNTON, SOMERSET AND BATH ASYLUM.—Assistant Medical Officer, unmarried. Salary £140 per annum, with apartments, board, and attendance.

DEVONPORT, ROYAL ALBERT HOSPITAL.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £50 a year, with board, lodgings, and laundry.

DORCHESTER, COUNTY ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £140, rising to £180, with board, lodging, &c.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer for the Casualty Department for six months, renewable. Salary at rate of £100 per annum, with luncheon.

EAST SUFFOLK AND IPSWICH HOSPITAL.—House Surgeon. Salary £50 per annum, with board, washing, and residence.

EGYPTIAN GOVERNMENT, MINISTRY OF EDUCATION.—Professor of Midwifery and Gynæcology. Salary £400 a year. Also Medical Tutor and Registrar to Kasr-el-Ainy Hospital. Salary £400 a year.

GORDON HOSPITAL FOR FISTULA, &c., Vauxhall Bridge-road, S.W.—Resident House Surgeon.

INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary £100, with board, &c.

LIVERPOOL, DAVID LEWIS NORTHERN HOSPITAL.—Two House Surgeons and a House Physician. Salary £60 each per annum, with residence and maintenance.

LIVERPOOL INFECTIOUS DISEASES HOSPITAL.—Assistant Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and lodging.

LONDONDERRY AND NORTH-WEST OF IRELAND EYE, EAR, AND THROAT HOSPITAL.—Honorary Surgeon.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board and residence.

MANCHESTER, ST. MARY'S HOSPITALS, Whitworth-street West, and Clifford-street.—House Surgeon. Salary £70 per annum.

MIDDLESEX HOSPITAL, W.—Second Assistant to the Director of the Bacteriological and Clinical Laboratories. Salary £100 per annum.

NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160 per annum.

NEWCASTLE-ON-TYNE, HOSPITAL FOR SICK CHILDREN.—Assistant Honorary Surgeon.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Junior Resident Medical Officer. Salary £70 per annum, with board, residence, and washing.

NORTHAMPTON GENERAL HOSPITAL.—House Physician, unmarried. Salary £90 a year, increasing to £100, with apartments, board, washing, and attendance.

OXFORD, RADCLIFFE INFIRMARY AND COUNTY HOSPITAL.—House Physician, House Surgeon, and Junior House Surgeon. Each for six months, and unmarried. Salary of two former at rate of £80 and of latter at rate of £40 per annum, with board, &c.

PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer, unmarried. Salary £130, with board, residence, attendance, and washing.

ST. HELENS COUNTY BOROUGH.—Assistant Medical Officer (female). Salary £160 per annum, rising to £200.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £50 a year, with board, lodging, and washing.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Surgeon, unmarried. Salary £50 per annum, with board and lodging.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with rooms, board, and washing.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Salary at rate of £40 per annum, with board, washing, and residence.

STROUD GENERAL HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Assistant House Surgeon, unmarried. Salary £50 per annum, with board, residence, and washing.

WORCESTER COUNTY AND CITY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £130 per annum, with board, lodging, and washing.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £120 a year, with board, lodging, and attendance.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Act at Stanford-le-Hope, in the county of Essex.

Births, Marriages, and Deaths.

BIRTHS.

HAYWARD.—On August 2nd, at The Grange, Wimbledon, the wife of John A. Hayward, M.D., F.R.C.S., of a daughter.

MOON.—On August 5th, at High Beach, Victoria-parade, Broadstairs, the wife of E. G Moon, M.R.C.S., L.R.C.P., of a daughter.

OSBORN.—On August 7th, at Enniamore House, Dover, the wife of Francis Arthur Osborn, of a son.

PASSMORE.—On July 31st, at Felbrig, Carshalton, Surrey, the wife of William Henry Passmore, M.R.C.S., L.R.C.P., of a daughter.

ROBERTS.—On July 23rd, at Sion Hill, Garstang, the wife of Henry Roberts, M.D. Brux., M.R.C.S. Eng., L.R.C.P. Lond., of a daughter.

MARRIAGES.

BAKER-MACKIE.—On July 26th, at Esher parish church, Captain W. Lincoln Baker, R.A.M.C., Aldershot, to Mary Yeats, elder daughter of the late T Mackie, of Great Western Estate, Ceylon, and Mrs. Mackie, Lisleworth, Esher, Surrey.

ST. JOHN-NORBURY.—On August 1st, at the parish church, Eltham, by the Rev. Elphinstone Rivers, Vicar of Eltham, and the Rev. A. E. Rubie, D.D., Headmaster of Eltham College, assisted by the Rev. A. G. Hodgson, M.A., Alexander Story St. John, L.R.C.P., M.R.C.S., of Eltham House, Eltham, youngest son of the late Colonel P. C. St. John, Indian Staff Corps, to Mabel Eleanor, third daughter of Inspector-General Sir Henry F. Norbury, K.C.B., M.D., F.R.C.S., R.N., Hon. Surgeon to the King, and of Lady Norbury, of St. Margaret's, Eltham.

DEATHS.

HUDSON.—On August 6th, at Cork-street, London, John Hudson, M.D., in his 88th year.

NORCOTT.—On August 4th, at Grosvenor hill, Wimbledon, William Boyle Norcott, M.R.C.S. Eng., aged 86 years.

RICHMOND.—On August 7th, at 11, Vicarage-road, Handsworth, James Richmond, M.D., D.P.H.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

CONCERNING BODIE.

"Dr." Bodie, who, like his fellow quack, "Professor" Richard, claims to cure the lame and the halt by electricity, has recently come within the clutch of the law. At the Bradford City police court on July 19th he was fined 2*s.* 6*d.* with 10*s.* costs, or seven days' imprisonment in three cases respectively, for having committed breaches of the Employment of Children Act, 1903. The prosecution was undertaken by the health committee of the Bradford corporation at the instigation of Dr. W. Arnold Evans, the medical officer of health. Of the three children, two said that they had gone on the stage to thank Bodie for having cured them. The third, John Moriarty, said that he had received 1*s.* on a Thursday night and 3*d.* on the following night. Inspector Smith said that this last boy apparently had electricity passed into his leg after having the joint of his ankle broken down. He then walked off the stage. What Bodie's apparent "cures" mean was well shown in the course of the trial of a man named Ernest Miller, a cripple, who was sentenced at the Clerkenwell sessions on May 22nd to 18 months' hard labour for stealing. It came out in evidence that Miller used to pose as one of Bodie's cures, but after being "cured" one night he appeared as much worse the next night and was "cured" again.

As pertinent to the above case we see that Bodie brought an action against Mrs. Hudson of Leeds for slander in that she asserted at the annual meeting of the Leeds Invalid Children's Aid Society that Bodie had paid money to the parents of the children who had been taken to the Tivoli Music Hall for treatment. The jury returned a verdict for Bodie with one farthing damages. In the course of the trial Bodie's manager denied that money had ever been given to either parents or children for their attendance on the stage. We direct the manager's attention to the evidence of John Moriarty at the Bradford city police court given above.

Mr. Justice Grantham, in the course of the action for slander at Leeds, is reported as saying "that the question was whether anyone had the right to accuse him (Bodie) of being a rank impostor and absolute lying." We presume that Mr. Justice Grantham was not aware of the evidence given by the police at Clerkenwell sessions in May.

THE SEXUAL PROBLEM.

To the Editors of THE LANCET.

SIRS,—The interesting contribution in THE LANCET of July 28th, p. 259, on "Professor August Forel on the Sexual Problem" reminds me that Professor Forel, who is professor of psychiatry at Zürich University, has issued his views in book form, "Die Sexuelle Frage," published by E. Reinhardt, Munich, 1905. This book is a forcible contribution to the physiology of the relation of the sexes and of the evolution of an improved race which, although wholly opposed to the trend of English opinion, might be acceptable to those of your readers who read German and have had their curiosity whetted by the extracts given by you.

I am, Sirs, yours faithfully,

Leyton, Essex, July 31st, 1906. N. CAMPBELL, M.B., D.P.H.

"NOBLESSE OBLIGE."

IN our last issue under this heading we quoted an appeal by the Honourable E. Pomeroy in which he remarked that "No Doctor has yet refused to Vaccinate with the stuff guaranteed pure by the Local Government Board." With fine impartiality the Honourable E. Pomeroy now in the *Morning Leader* of August 3rd and August 4th issues the appeal which we give below:—

TO DOCTORS.—No. II.

Vaccination has never been defined (see "Jenner and Vaccination," by Charles Creighton, M.D.).

The stuff issued by the Local Government Board, and called Calf Lymph, Pure Calf Lymph, Glycerinated Calf Lymph, &c., is *not* guaranteed pure by the Local Government Board.

Some scores of London children are annually either impaired for life or put to death by vaccination with the stuff *not* guaranteed by the Local Government Board.

Will any London doctor refuse to operate with the stuff *not* guaranteed pure by the Local Government Board? It is difficult to see in what way the white liquid secreted by grown-up calves for the nourishment of their young fails to answer the desideratum of pure calf lymph. Will any London doctor make use of some such pure calf lymph as is suggested and provide the usual certificates? If so, will he kindly communicate with the Hon. E. Pomeroy, 6, Campden House Chambers, Kensington, W.?

The advertisement which follows in the *Morning Leader* of August 4th upon the Honourable E. Pomeroy's advertisement begins: "DEAREST.—What must you think—not knowing circumstances?" And, indeed, it is wonderful to watch the workings of the layman's mind, when he is on the war-path against the medical profession.

CONTAGION FROM PUBLIC TELEPHONES.

To the Editors of THE LANCET.

SIRS,—May I ask that in the interests of the public you will publish my recent experience as to the growing danger arising from the use of the common mouthpiece by promiscuous callers at public telephones. And perhaps you will invite correspondence from medical men and others with a view to obtaining suggestions as to minimising this menace to the public health. During the last week three people used our public telephone who were in no way fit to do so, and yet under present conditions it is impossible to prevent the risk which they convey to other users of the telephone. In one case a man evidently advanced in consumption, having a violent cough with expectoration, used the instrument and afterwards I found the mouthpiece damp with. I presume, his congealed breath. Later in the week a lady called up her medical attendant from his call office, and from the conversation which ensued I gathered that her children were suffering from measles. I also had a case in which from the conversation heard there is no doubt the user came from a house infected with chicken pox.

I personally use a pad saturated with a disinfectant, and perhaps if attendants were to frequently wipe the mouthpiece with such a pad risk would be obviated.

I inclose my card in confidence, but ask that I be allowed to sign myself,

CALL OFFICE ATTENDANT.

London, August, 1906.

"NOT VERY GAY."

IN reference to the article entitled "The Humours of Country Practice" which appeared in THE LANCET of July 28th, p. 275, a correspondent writes to us to say that the word "gay" in the expression of the patient concerning the state of his bowels, "Not very gay, sir," may be connected with the provincial English word "gain" meaning "tolerable" or "fairly." He is correct in his surmise but the word "gay" is not that which has the meaning of "merry" but the Scots word "gey" which is both an adjective and an adverb and in its adverbial sense bears the meaning of "tolerably," "fairly," or "pretty." For example, "gey bad" means "pretty bad"—i.e., rather worse than "rather bad" and not so bad as "very bad." The expression "not very gay" would therefore mean "not very regular," or "they do not act much," or "not notably." Jamieson in his Scottish Dictionary gives one meaning of "gey" as "worthy of notice" and Murray, Oxford English Dictionary, under the same word, says "Cf. gain"—i.e., "gain" in the sense spoken of above.

DISEASE IN THE BRIDE'S CAKE.

To the Editors of THE LANCET.

SIRS,—Now that the filthy practice of inflating the cellular tissue of the calf and other animals is being once more publicly condemned, mainly on the grounds of the dissemination of tuberculosis, I should like to draw attention to the equally disgusting and filthy practice of blowing icing and other sweetstuffs upon bride's cakes and other ornamental pastry by means of tubes applied to the lips of the pastrycook. I have quite recently come across a case where the man was suffering from well-marked syphilitic disease of the mouth and throat.

I am, Sirs, yours faithfully,

Putney, S.W., August 2nd, 1906. A. S. MORTON, M.D. Durh.

A LID FOR OPENED CONDENSED MILK CANS.

WE have had submitted to us by Nurse Bennett, of 48, Agnes-street, Waterloo Station, London, a lid made of tin for covering condensed milk tins when opened to prevent access therein of flies and dirt. The plan is to cut the top of the milk can right off and fit on the tin cap which consists of a narrow band or collar of metal surmounted by a flat hinged lid. The shape of this lid resembles the usual illustration of a segment of a circle, the segment being soldered down on to the edge of the collar, the hinge being in the centre of the chord, and the remainder of the circle forming the moveable lid, exposing underneath a semicircular flange at a distance of a quarter of an inch from the edge. The nurse says that she has found it useful in the sick room, particularly when on night duty, to cover a glass or jug of milk or beef-tea. We think it quite desirable that drinks that are left standing a long time should be covered up, and think that for condensed milk cans the idea is particularly good. If the top of the milk can is cut off neatly close to the edge we see no difficulty likely to be caused by the flange on the under side of the lid.

A CURE FOR INEBRIETY.

A CIRCULAR is issued by the Scottish Hagey Institute, whose offices are at 107, West Regent-street, Glasgow, which gives an assurance that the treatment adopted by the institute will not only enable inebriates to become total abstainers but will benefit them in a variety of other ways. Everyone knows that it is not extremely rare for an inebriate to become a total abstainer for a time, but we are not at present so much concerned with the efficacy or otherwise of this "cure for inebriety" as with the audacious offer of a commission of three guineas to medical men introducing patients. The institute might, if it chose, send circulars to medical men explaining its system of treatment, thereby leaving them to advise their patients as they think fit, but it is quite another thing to attempt to bribe the medical advisers of inebriate patients into recommending the "cure" advertised by the institute. We would advise our readers to beware of persons who seek to push their wares in this fashion.

INSURANCE APPOINTMENTS.

To the Editors of THE LANCET.

SIRS,—I have just received a call from an insurance agent who said that the chief medical officer of the company he represented had given him my name and that of one other practitioner in this locality for an appointment, the salary of which was to be £100 per annum in addition to fees. It soon appeared, however, as indeed I had half expected, that the "qualification" for this valuable appointment was 500 shares in the company, which, by the way, was only registered last week!

I frankly told the young gentleman that I was too old a bird to be caught with chaff of that nature, but he was confident that plenty of my brother practitioners would jump at the chance.

I am, Sirs, yours faithfully,

Woolwich Common, August 8th, 1906. THEODORE MAXWELL.

CUSTOMS OFFICERS AND THE PUBLIC HEALTH.

THE Commissioners of His Majesty's Customs, in their report for the year ending March 31st last, remark that the officers of Customs are employed in various ways for the security of the public health, a fact which has largely escaped the notice of the public. Duties directly connected with the public health are performed not only under the Public Health Act, 1875, as amended by the Public Health Act, 1896, but also under Section 5 of the Revenue Act, 1883. Under this latter Act all ships on arrival at any port or place in the United Kingdom must bring to at the station appointed for the boarding of ships and it is at this time that the duties of the Customs department under the Acts mentioned are performed. The procedure is briefly as follows. The master or other responsible officer is questioned as to where the vessel comes from and as to whether there is, or has been, any sickness on the voyage. These questions are answered either verbally or in writing, as circumstances require. If the replies are satisfactory the vessel is allowed to proceed. If, however, they show the vessel is infected she is required to moor at a specified place and cannot quit it nor can any person leave her until an examination is made by the port medical officer. A vessel is deemed "infected" when she has, or has had, on board any case of cholera, yellow fever, or plague. In cases where there has been on board during the voyage any other illness calling for the intervention of the port medical officer he is so informed before any person leaves the vessel. Persons making false answers to the oral or written questions or wilfully neglecting or refusing to obey or carry out, or obstructing the execution of, any regulations framed under the Public Health Act are liable to heavy penalties. In September last a vessel arrived at an east coast port with a suspected case of cholera on board. She was accordingly required to moor at the mooring station appointed for infected vessels. Upon examination by the medical officer it turned out that the patient was really suffering from the effects of excessive drinking and, upon the certificate of the medical officer that the vessel was free from infection, she was allowed to proceed.

HARVEST BUGS.

To the Editors of THE LANCET.

SIRS,—I should be glad if any of your readers could tell me of a reliable remedy for getting rid of the "harvest bug." I have tried sulphur ointment and corrosive sublimate lotion but without any relief. The irritation, more especially at night, is almost unbearable.

I am, Sirs, yours faithfully,

August 7th, 1906. L.R.C.P.

COMMUNICATIONS not noticed in our present issue will receive attention our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, August 9th, 1906.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks
Aug. 3	29·77	W.	0·32	128	76	63	61	67	Cloudy
,, 4	29·96	W.	...	122	73	58	60	66	Cloudy
,, 5	30·19	W.	...	134	76	57	61	65	Cloudy
,, 6	30·19	S.W.	...	111	74	56	61	66	Fine
,, 7	30·10	S.W.	...	125	81	59	65	67	Cloudy
,, 8	29·98	S.W.	...	127	85	63	62	71	Fine
,, 9	29·85	W.	...	119	74	60	59	66	Cloudy

During the week marked copies of the following newspapers have been received: *Liverpool Courier, Clay Cross Chronicle, Glasgow News, Manchester Guardian, Birmingham Post, Bristol Mercury, Leeds and Yorkshire Mercury, Freeman's Journal, Devon Gazette, Darlington Echo, Northampton Reporter, Dublin Times, Hull Mail, Belfast Whig, Dublin Independent, Leeds Post, Sheffield Independent, Daily Mail, Leicester Post, Sheffield Telegraph, Westminster Gazette, Cardiff Mail, Globe, &c.*

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (13th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (3 P.M.).

TUESDAY (14th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.).

WEDNESDAY (15th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.).

THURSDAY (16th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.).

FRIDAY (17th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), St. Mark's (2.30 P.M.).

SATURDAY (18th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (13th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith road, W.).—12 noon: Lecture:—Dr. Low: Pathological Demonstration. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations. Mr. Dunn: Diseases of the Eye.

TUESDAY (14th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. Diseases of the Throat, Nose, and Ear. 2.30 P.M.: X Rays. Operations. Dr. Abraham: Diseases of the Skin.

WEDNESDAY (15th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations.

THURSDAY (16th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations. Mr. Dunn: Diseases of the Eye. 4 P.M.: Lecture:—Mr. Dunn: Demonstration on Selected Eye Cases.

FRIDAY (17th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Diseases of the Throat, Nose, and Ear. Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations. Dr. Abraham: Diseases of the Skin. 5 P.M.: Dr. Ball: Some Points in Middle Ear Suppuration (with lantern slides).

SATURDAY (18th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Diseases of the Throat, Nose, and Ear. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: X Rays. Operations.

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THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1906, which was completed with the issue of June 30th, and the Title-page to the Volume, were given in THE LANCET of July 7th.

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